

TESUCO

TECHNICAL SUPPLIES COMPANY

Gas Equipment

Oxygen & Acetylene Heating

QUALITY GAS EQUIPMENT

tesuco.com.au

Our name Tesuco® comes from
Technical Supplies Company.

We Thank You For Choosing Our Quality Gas Equipment

Beginning in 1988, Tesuco® has established itself as a specialist equipment supplier for all gas welding, heating and cutting applications. Tesuco® is proud to be 100% Australian owned and has been quality endorsed by SAI Global to the AS/NZS ISO 9001 Standard since 1995.

Tesuco® continues to introduce new and exciting products from the best Australian and overseas manufacturers. This booklet introduces you to our range of welding, heating and cutting equipment, available through our extensive distributor network both here and abroad.



Only trained operators may use this equipment.



Tesuco Pty Ltd

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Scan QR code to view
our complete range
of gas equipment.



Australian & New Zealand Standards

There are many Australian standards covering gas equipment, however one of the most important is AS 4839 – “The Safe Use of Portable and Mobile Oxy-Fuel Systems for Welding, Cutting, Heating and Allied Processes”. It covers items like cylinder handling and transportation, gases, hoses and hose length, regulators, flashback arrestors, blowpipes, tips and nozzles and includes a guide on maintenance and testing of the equipment.

For peace of mind Tesuco® equipment conforms to all of the relevant Australian and New Zealand standards. In some products, such as our oxygen regulators, our testing is beyond that of many in the marketplace. Not all oxygen regulator have passed the promoted ignition test (referred to as the bomb test) as listed in AS 4267. To ensure ultimate safety, Tesuco® oxygen regulators have passed this test.

Acetylene Withdrawal Rates

Choice of equipment may be restricted by the size or number of acetylene cylinders you use. Acetylene cylinders must display the maximum withdrawal rate on the cylinder label. Further to this, continuous withdrawal (over 20 minutes) and depletion of cylinder contents will reduce the available withdrawal rate. Exceeding the maximum withdrawal rate of acetylene cylinders may cause flashbacks, serious damage to equipment and/or injury to the operator. The correct cylinder size or number of cylinders must be used relevant to the gas consumption of the tip. To simplify this, flow rate information to safely use each tip/nozzle is supplied in this booklet and a guide for cylinders to be used.

Regulators

Australian Standards

Australian Standard AS 4267

Previously, regulators from most suppliers have only been available in bottom entry. Cylinders, however may have either a top or side outlet valve. To cater for this Tesuco® regulators are available in both bottom and side entry configuration. This ensures the appropriate regulator can be used to maintain the correct orientation of the regulator and gauges during operation, making it easier to read and adjust pressures.

Tesuco® made sure the oxygen regulator passed the promoted ignition test as listed in AS 4267 - Appendix A.

Dual Stage Bottom & Side Regulators

Dual stage regulator are also recommended for heating applications to ensure a stable flowrate between a full cylinder to almost empty.

As the cylinder decreases in pressure, single stage regulators will need to be adjusted manually to maintain pressure setting require, this is not the case with a dual stage regulator.

Hoses

Australian & New Zealand Standards

Australian standard AS/NZS 1335

Tesuco® 5 mm ID hoses suit welding, brazing and cutting while 10 mm ID hoses suit gouging and heating applications due to flow rates. This requires the hoses to be branded as a ISO standard number.

Heating & Gouging Nozzles

Due to the large flow rate of these items, it is not recommended to use a single cylinder, standard flashback arrestors, or 5 mm ID hose. High flow flashback arrestors have part numbers starting with FRH or FTH, 10 mm ID hose is recommended for all heating and gouging applications.



Gas Equipment

Oxygen & Acetylene Heating

Q&A

Question **Are you using the correct amount of acetylene cylinders, setting the right pressures and using the correct equipment?**

How do you overcome this key question?

Answer *The answer is simple, if you want to use the hottest gas combination – You must use multiples of cylinders manifolded together, if you want to use these acetylene heating nozzles safely. This is why Tesuco® doesn't supply these nozzles in any of our gas kits which are designed for use with one cylinder.*

All of Tesuco's oxygen and acetylene heating equipment has been designed for safe use, if the operator understands the issue with supplying enough gas to keep the flame burning outside of the nozzle. Using one standard "G" size cylinder pushes the limits beyond being safe to use in all cases. One needs to understand the boundaries of acetylene and the cylinder size. Gas companies can supply the information needed to check the flowrates or the maximum withdrawal rates based on short or long term use. The following information is a guide for the safe use of Tesuco® heating equipment.

Acetylene heating nozzles need between 41 - 65 L/min or 2.46 - 3.90 m³/H of acetylene at a delivery pressure of 100 kPa when flowing to safety use acetylene and oxygen heating nozzles.

Anyone that uses heating equipment with one "G" acetylene cylinder runs the risk of withdrawing acetone into the equipment or cause the flame to burn inside the nozzle due to lack of supply and increases the chances of a flashback into the equipment.

The acetylene withdrawal rate will depend on the cylinder size and the number of cylinders in a pack or in a manifold system. To choose the correct equipment to use you must start at the heating nozzles and view the information on the tip. This information should be stamped on the nozzle as it is a requirement in AS 4839, point 6.8. (AS 4839-2001 the safe use of portable and mobile oxy-fuel gas systems for welding, cutting, heating and allied processes.)

There are two common sizes of acetylene heating nozzles, 8 x 12 or a 12 x 12.

The GWHT812 nozzle from Tesuco® uses the standard welding 10 mm mixer GWMI10 and the other two nozzles use the 13 mm mixer GWMI13 as pictured on the left.

PART NO	TIP SIZE	PRESSURE (kPa)	
		OXYGEN	ACETYLENE
GWHT812	8 x 12	150	100
GWHTA1	8 x 12	150	100
GWHTA2	12 x 12	200	100

Note: Typical consumption rates have been listed. These may vary depending on settings by the operator and environmental conditions.



GWHTA1
Acetylene Heating Nozzle (8 x 12)



GWHTA2
Acetylene Heating Nozzle (12 x 12)

To safely use the GWHT812 or the GWHTA1 (8 x 12) heating nozzle you need to supply a minimum of 41 to 55 litres per minute of acetylene, which means between 2.46 to 3.3 cubic metres per hour of acetylene. The problem is that a "G" size cylinder will supply only around 1.0 cubic metre of acetylene or 1/7 of the content per hour. These figures will change to around 1/15 if the cylinder is used for a long period. The lack of gas supply can cause the flame to burn inside the equipment and not at the end of the heating nozzles, as it is designed to do when the correct pressures are set. Acetone withdrawal is common if you exceed the withdrawal rate of the acetylene cylinder. You can see this by the colour change in the flame. A greenish bright spurt will appear in the flame when the acetone is burning. Acetone withdrawal will also damage the complete heating system; that is, the regulator, flashback arrestors, hoses, blowpipe, mixer and the nozzle, should this happen, equipment must be checked for damage by a trained operator or by an equipment specialist.

To safely use the GWHTA2 (12 x 12) heating nozzle you need to supply a minimum of 65 litres per minute of acetylene, which means 3.9 cubic metres per hour of acetylene.

Tesco® can supply a temporary manifold setup to help you to connect acetylene cylinders together or a complete permanent manifold system. In addition to this, the flashback arrestors used for any heating or gouging application should be a high or medium flow model due to restriction in the standard model flashback arrestors. Also use 10 mm ID welding hose instead of the standard 5 mm ID hose.

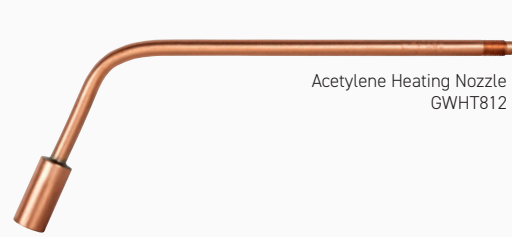
Reticulation Manifold Systems

Companies or training colleges should check to see if the systems have the correct amount of cylinders or cylinder packs before the nozzles are used. Not only for the use of heating equipment but of all operations during the use of acetylene.

Gas Equipment

Oxygen & Acetylene Heating

TYPICAL CONSUMPTION (L/min)		HEAT OUTPUT (MJ/h)
OXYGEN	FUEL GAS	
45-58	41-55	180
45-58	41-55	180
74	65	215



Acetylene Heating Nozzle
GWHT812



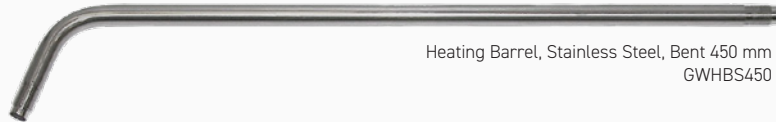
Mixer
GWM110



Heating Barrel, Stainless Steel, Straight, 735 mm
GWHBS735



Heating Barrel, Stainless Steel, Bent 700 mm
GWHBS700



Heating Barrel, Stainless Steel, Bent 450 mm
GWHBS450



Mixer
GWM113



Acetylene Temporary Manifolds

The MTAC temporary manifold is designed to fit two acetylene cylinders together, doubling the supply of acetylene.

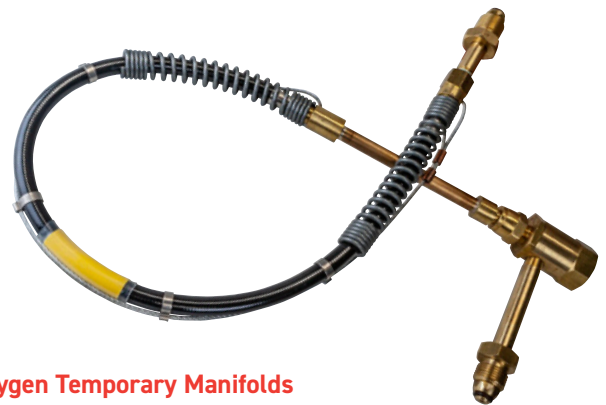
You may have to use extra MTAC manifolds to give you the withdrawal rate required, for example;

- 1 x MTAC will fit 2 cylinders plus your regulator
- 2 x MTAC will fit 3 cylinders plus your regulator
- 3 x MTAC will fit 4 cylinders plus your regulator

Note: The connection leads for acetylene contain an anti-detonation coil inside the lead as an extra safety feature.

Acetylene gas pack, or bundle from your gas supplier, is another way you can obtain the correct amount gas needed. All gas cylinders should have a label which should state the maximum withdrawal rate of acetylene from the cylinder.

If this is not stated, ask the gas supplier for the details.



Oxygen Temporary Manifolds

The MTOX temporary manifold is designed to fit two oxygen cylinders together, doubling the supply of oxygen.

You may have to use extra MTOX manifolds to give you enough oxygen to complete the heating job, for example;

- 1 x MTOX will fit 2 cylinders plus your regulator
- 2 x MTOX will fit 3 cylinders plus your regulator
- 3 x MTOX will fit 4 cylinders plus your regulator

Note: The connection leads for oxygen contain a heat sink in the lead as an extra safety feature.

You may also have to using a temporary manifold on the oxygen cylinder due to the flowrate needed for these heating nozzles. The standard "G" size oxygen cylinder contains 8.9 cubic meters (dependent on gas company). The GWHT812 or the GWHTA1 (8 x 12) heating nozzle consumption of oxygen is around 2.7 to 3.48 cubic meters per hour. While the GWHTA2 (12 x 12) will consume around 4.44 cubic meters per hour, therefore the oxygen cylinder would be empty in around 2 hours.

Gas Equipment

Safe Use of Acetylene Heating Nozzles



SINGLE STAGE
BOTTOM ENTRY



RC1BOX10

SINGLE STAGE
SIDE ENTRY



RC1SOX10

DUAL STAGE
BOTTOM ENTRY



RT2BOX10



RT2SOX10



SINGLE STAGE
BOTTOM ENTRY



RC1BAC1.5

SINGLE STAGE
SIDE ENTRY



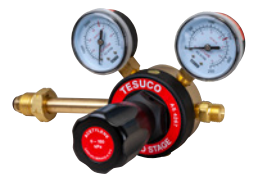
RC1SAC1.5

DUAL STAGE
BOTTOM ENTRY



RT2BAC1.5

DUAL STAGE
SIDE ENTRY



RT2SAC1.5



Check the cylinder flow rate before using any gas equipment.

GWHTA1 (8 x 12)

GWHTA2 (12 x 12)



GWHT812 (8 x 12)

GWHS735

GWHS700

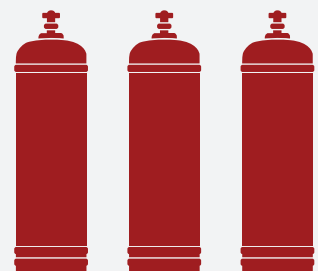
GWHS450

Number of Acetylene Temporary Manifolds and Cylinders Needed Based on 1 Hour for the 8 x 12 Nozzles, GWHTA1 or GWHT812

MINIMUM WOULD BE 2 x MTAC ACETYLENE TEMPORARY MANIFOLD

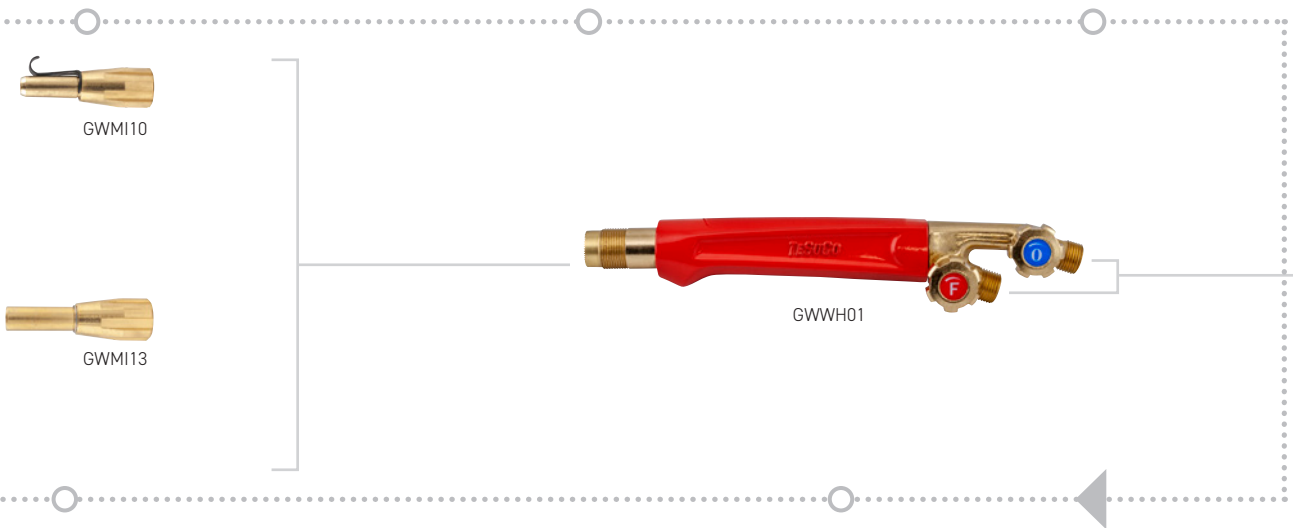
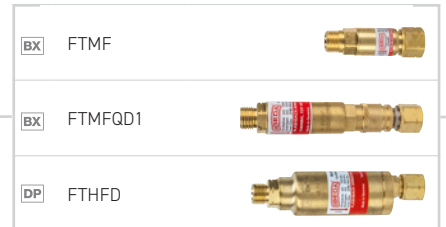
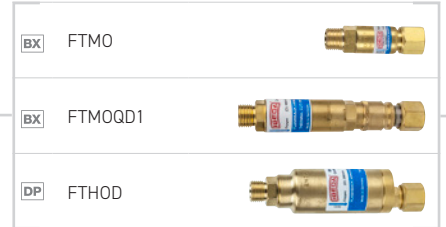
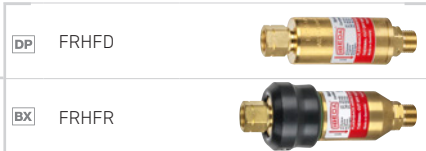
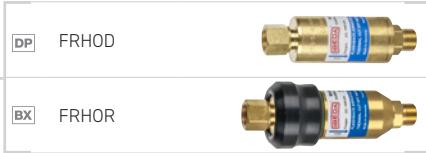


2 x MTAC WOULD CONNECT 3 "G" SIZE ACETYLENE CYLINDERS



Gas Equipment

Safe Use of Acetylene Heating Nozzles

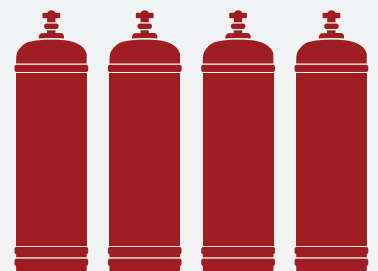


Number of Acetylene Temporary Manifolds and Cylinders Needed Based on 1 Hour for thea 12 x 12 Nozzles, GWHT2

MINIMUM WOULD BE 3 x MTAC ACETYLENE TEMPORARY MANIFOLD



3 x MTAC WOULD CONNECT 4 "G" SIZE ACETYLENE CYLINDERS



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The information in this brochure is to be used as a guide only.
The ultimate responsibility for safe use of the equipment lies with the operator. In the interest of constant improvement in quality and design, product specifications may change at any time, without notice. E&OE

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