

CIGWELD

AN ESAB BRAND



100+
YEARS OF
WELDING
INNOVATION

COMET



**PREMIUM
GAS KITS**

OPERATING MANUAL

CIGWELD

AN **ESAB** BRAND

WE APPRECIATE YOUR BUSINESS!

Congratulations on your new CIGWELD product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network.

This Operating Manual has been designed to instruct you on the correct use and operation of your CIGWELD product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product.

We have made every effort to provide you with accurate instructions, drawings, and photographs of the product(s) while writing this manual. However errors do occur and we apologize if there are any contained in this manual.

Due to our constant effort to bring you the best products, we may make an improvement that does not get reflected in the manual. If you are ever in doubt about what you see or read in this manual with the product you received, then check for a newer version of the manual on our website or contact our customer support for assistance.

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Above all, we are committed to develop technologically advanced products to achieve a safer working environment for industry operators.



100+
YEARS OF
WELDING
INNOVATION

**WARNING**

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing this product. While the information contained in this Manual represents the Manufacturer's best judgement, the Manufacturer assumes no liability for its use.

**COMET GAS CUTTING,
WELDING & GOUGING KITS****PART NUMBERS:**

**308315, 308313,
308316 & 308394**

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**RECORD THE FOLLOWING
INFORMATION FOR WARRANTY
PURPOSES:**

Where Purchased:

Purchase Date:

Equipment Serial #:

CONTENTS

SECTION 1:

GAS CUTTING, WELDING & GOUGING SAFETY INSTRUCTIONS AND WARNINGS **5**

1.01	PERSONAL SAFETY	5
1.02	CYLINDERS GENERAL	5
1.03	OXYGEN CYLINDERS	6
1.04	ACETYLENE CYLINDERS	6
1.05	LPG CYLINDERS	7
1.06	BLOWPIPES AND REGULATORS	7
1.07	MULTIPURPOSE CUTTING TORCH	8
1.08	HOSE HANDLING AND CARE	8
1.09	FLASHBACK ARRESTORS	8
1.10	SETTING UP	8
1.11	PURGING BEFORE LIGHTING UP	9
1.12	SAFETY PRECAUTIONS	10
1.13	CYLINDER SAFETY	10

SECTION 2:

INTRODUCTION **11**

2.01	KIT CONTENTS	11
2.02	GAS REQUIREMENTS	13

SECTION 3:

INSTALLATION **14**

3.01	FITTING REGULATORS TO CYLINDERS	14
3.02	FITTING FLASHBACK ARRESTORS TO REGULATORS	15
3.03	FITTING HOSES TO FLASHBACK ARRESTORS (REGULATOR END)	15
3.04	FITTING FLASHBACK ARRESTORS TO TORCH	15
3.05	FITTING HOSES TO FLASHBACK ARRESTORS (TORCH END)	16
3.06	WELDING & BRAZING ASSEMBLY	16
3.07	CUTTING & GOUGING ASSEMBLY	17
3.08	TESTING FOR LEAKS (BLOWPIPE)	17
3.09	TESTING FOR LEAKS (MULTIPURPOSE TORCH)	18

SECTION 4:

LIGHTING UP / CLOSING DOWN PROCEDURE **19**

4.01	LIGHTING UP PROCEDURE: WELDING & BRAZING	19
4.02	CLOSING DOWN PROCEDURE: WELDING & BRAZING	21
4.03	LIGHTING UP PROCEDURE: CUTTING & GOUGING	22
4.04	CLOSING DOWN PROCEDURE: CUTTING & GOUGING	23
4.05	RANGE OF ACCESSORIES	24
4.06	COMET 500 AND 700 REGULATORS	28
4.07	WELDING & BRAZING PROCESSES	32

SECTION 5:

NOZZLE CLEANING INFORMATION **40**

SECTION 6:

SERVICE AND REPAIR **40**

WARRANTY **41**

SECTION 1: GAS CUTTING, WELDING & GOUGING SAFETY INSTRUCTIONS AND WARNINGS

The information shown under this note must be followed carefully to avoid injuring the operator or anyone in the operating area.

When an accident does occur with welding equipment, it's usually due to the operator having become careless through over-familiarity. Remember, the safest of equipment, if wrongly handled, can cease to be safe. For safe welding and cutting check and re-check the points in this article. Each point is there for a purpose.

1.01 PERSONAL SAFETY

Be neat and clean about your work. Maintain your equipment in good condition. Wear goggles with the correct shade filter when using gas equipment. Goggles protect your eyes against sparks and injurious rays. It is essential that the goggles and filters are of a type intended for welding work. Quite apart from safety, they help you see your work better. Wear suitable gloves, aprons, shoes and protective clothing. Watch for sparks in sleeves, cuffs and open pockets. Never use oxygen to dust clothes or work. Use a flint lighter or pilot light to light blowpipe. Never use matches. Keep flame, sparks or metal away from cylinders and tubing. When working with lead, lead bearing materials, steel coated with lead paints, cadmium-coated materials or any objects containing metals giving off toxic fumes, always use a suitable respirator. Never use a blowpipe when working on staging suspended from fibre rope.

1.02 CYLINDERS GENERAL

Industrial gas cylinders are made to rigid specifications and are inspected each time they are refilled by your supplier. They are safe if properly handled. All Government and insurance regulations relating to the storage of oxygen, acetylene and LPG cylinders should be closely observed. Keep all cylinders, empty or full, away from radiators, furnaces and other sources of heat. Also avoid contact with electrical circuits.

Keep oil and grease away from cylinders. Cylinders standing in the open should be screened against direct rays of the sun. Protect cylinders valves from bumps and falling objects. Keep the valves clean, free from oil, grease and all foreign materials. Close cylinder valves when not in use, when empty, or when moving cylinders. Always remove regulators when moving cylinders. Be sure the cylinder valve is tightly closed before removing regulators. Never allow anyone to strike an arc or tap an electrode against any cylinder. Never try to fill a cylinder or mix gases in a cylinder. Never tamper with or alter cylinder numbers or markings. Never use cylinders as supports or rollers. When transporting cylinders using a crane, do not use slings- use a cylinder cradle. Never draw gas from cylinders except through properly attached pressure regulators or equipment designed for the purpose. If damaged, send the regulator to the supplier or

appointed agent for repairs. If unable to make a gas-tight seal between the cylinder valve and a regulator spigot, first check whether the spigot nut is tight. If so check the regulator spigot. If the cylinder valve is damaged notify the gas supplier. Never insert washers of lead or other material between the regulator and the cylinder valve. Never use oil or grease on these connections. Use only standard cylinder keys to open cylinder valves, never extend the length of these keys under any circumstances. If valves cannot be opened by hand, do not use a hammer or wrench; notify the supplier. Open all cylinder valves slowly. Leave cylinder key in position when fuel gas cylinder valves are open.

1.03 OXYGEN CYLINDERS

Oxygen cylinders are steel shells of ample strength for their purpose. Besides routine inspections, they periodically undergo a searching examination, which includes a hydraulic pressure test. Always call oxygen "Oxygen" not "Air".

Never use oxygen in pneumatic tools, in oil pre-heating burners, to start engines, to blow out pipelines or to freshen the atmosphere in confined spaces.

In short, under no circumstances use oxygen as a substitute for compressed air or other gases.

1.04 ACETYLENE CYLINDERS

Acetylene cylinders contain porous material, which is impregnated with acetone. The acetylene is dissolved under pressure in this acetone. All acetylene cylinders are fitted with fusible plugs. These are designed to vent the cylinder contents in the event of an unsafe condition arising in the cylinder due to any cause such as overheating or decomposition arising from either incorrect operating technique, faulty equipment alone, or in conjunction with excessive temperature. In the event of a safety device functioning, always notify the supplier. The reason for the device operating always warrants special investigation. Always call acetylene "acetylene" not Gas. Always keep acetylene cylinders upright, whether in use or in store, full or empty. Always keep acetylene cool, store them upright in a well-protected, well ventilated dry location, away from highly combustible materials and oxygen cylinders. Should an acetylene valve leak around the spindle, close the valve and tighten the gland. If this fails, or if the fusible plug is leaking, remove cylinder to open air.

Keep the cylinder well away from anything which could possibly set the escaping acetylene on fire. Tag the cylinder to explain the trouble. Notify suppliers at once. If acetylene, escaping from a leaking cylinder valve gland or from an improperly seated regulator spigot ignites, immediately close the cylinder valve. If this is impossible, treat from point two below. If an acetylene cylinder is heated accidentally or becomes hot through severe flashback, or other cause, action should be taken promptly in the following manner:

1. Shut the cylinder valve
2. Clear all personal from the area
3. Cool the cylinder with a copious supply of water and notify the fire brigade



NOTE

The person directing the fire hose should be protected behind some suitable shelter. If the safety device functions and the issuing gas ignites, cool the cylinder as above, but avoid extinguishing the flames. If the escaping gas does not ignite, care must be taken to avoid an air/acetylene explosion. No source of ignition must be permitted to enter the area. Existing sources of ignition should be rendered safe.

4. Continue cooling the cylinder with copious quantities of water until it is quite cool. This may be determined by removing the cooling water at intervals and watching whether the water on the cylinder fries off, or whether the cylinder remains wet.
5. Notify the supplier
6. In cases where the supplier's representative is unavailable or cannot reach the scene of the incident within half an hour, the cylinder may after this period be removed carefully to an open space away from buildings and any source of ignition provided it remains cool and wet.
7. The cylinder valve should then be opened until the cylinder is empty. During this period a copious quantity of water should be poured on the cylinder.
8. When the cylinder is empty check whether the cylinder is cool, if so, close the valve.

1.05 LPG CYLINDERS

LPG cylinders are provided with relief valves or fusible plugs to discharge their contents and keep the cylinder pressure within safe limits should the cylinder be overheated by a fire. LPG cylinders should be used and stored upright in the open, away from combustible material. Do not store LPG cylinders with oxygen cylinders. Do not store LPG cylinders closer than 1.5m horizontally from any opening into a building. If LPG cylinder valve leaks around the spindle, or if the relieve valve or fusible plug is leaking, remove the cylinder to open air away from buildings and sources of ignition; tag the cylinder to explain the trouble; notify the supplier as soon as possible. If LPG escapes from a leaking cylinder valve gland or from a regulator spigot ignites, immediately close the cylinder valve. If LPG escaping from a fusible plug ignites, direct a fine water spray at the cylinder and surrounding equipment. On no account should the flame be extinguished, since escaping unburned gas in a confined space may re-ignite and cause an explosion. LPG is not toxic and is odourless, but an odorant is added to give a distinctive smell. If the distinctive odour is detected an immediate check should be made for leaks. Soapy water is recommended for this purpose. As soon as the leak is located, turn off the LPG cylinder valve and tighten or repair the equipment. If LPG is leaking do not strike matches or operate any electrical appliance in the vicinity. Remove all sources of ignition and open all doors and windows. Do not attempt to relight LPG until all traces of LPG odour have disappeared. Remember, LPG is heavier than air and will remain in open containers, cellars and confined spaces for a considerable time.

1.06 BLOWPIPES AND REGULATORS

Do not work with damaged equipment. Have leaking or damaged equipment repaired by an authorized repair agent. Give your oxy-fuel gas equipment the care you would give any other dependable tool. Do not use oil or grease on any blowpipe or regulator. Do not handle equipment with an oil rag, oily gloves or hands. Keep your equipment clean. Never use a blowpipe as a hammer to knock slag from work. Damage to blowpipes or their tips can cause trouble. Never use regulators for purposes other than that for which they were intended. Inspect connections and all seating surfaces on regulators and blowpipes before

use. Damaged connections can cause flashbacks. Never hang a blowpipe or tubing on a regulator or cylinder valve. Crack cylinder valves before attaching regulators. Cracking means to open the valve a little, then immediately close, to blow out dust or foreign matter. Cracking should always be done gently. Never crack a fuel gas valve near other welding works, sparks or open flame. Never force connections. Be sure all connections are tight. Never test for leaks with a flame. Never try to connect a regulator to a cylinder containing gas other than that for which the regulator is meant. Should a leak develop around blowpipe valve spindle, tighten the packing nut. If necessary have the valve repacked. (Use only packing supplied by the manufacturer or the blowpipe). Daily maintenance of tips and nozzles is important for good results. Tip and nozzle cleaners and drills have been specially designed for this purpose. They will clean even the smaller bores without causing damage. Where you have distortion of the orifice itself, the drills are essential. If a regulator shows excessive creep (pressure build-up when blowpipe valve are closed), close cylinder valve and have regulator repaired at once. Quite apart from risks, creeping regulators lead to poor work. Pressure build-up in excess of 35 kPa is to be regarded as excessive and call for immediate attention. Periodically, have pressure gauges on regulators tested for accuracy. Ensure before using that regulators have both a cylinder pressure and a delivery pressure gauge in working order. Before opening cylinder valves always fully release regulator adjusting knob. A sudden pressure rise in a regulator whose adjusting knob is screwed in puts a heavy strain on the mechanism and may cause damage. Never release the regulator adjusting knob while there is pressure in the tubing. If the pressure gauge indicator fails to return to the stop when pressure is released, have the gauge checked.

Always take care to keep the regulators free of oil and grease. Oil and grease should be removed chemically by a qualified repair technician. Never use oil or grease on the regulator, cylinder or manifold connections. Do not change the inlet connection on a regulator in an attempt to use the regulator for a different gas service.

1.07 MULTIPURPOSE CUTTING TORCH

1. Always use the multipurpose cutting torch in accordance with the correct operating instructions and procedures so as to ensure safe, trouble free operation. Use protective clothing and goggles and make sure sparks, slag etc from the cutting operation are disposed of safely.
2. Ensure that the multipurpose cutting torch and all parts of the equipment carrying the fuel gas and oxygen are checked periodically for gas leaks and good performance. Use only soapy water or approved solutions. NEVER a Flame.
3. Use the multipurpose cutting torch only with the fuel gas for which it was designed. Operation with the wrong fuel gas may lead to sub-standard performance and flame instability, which could cause backfiring or flashbacks.
4. Do not use the cutting torch as a "hammer", as doing so may damage the product and create potentially hazardous gasleaks.
5. Do not attempt to modify, service or repair the product. This should be carried out by trained personnel only:

1.08 HOSE HANDLING AND CARE

Long lengths of hose are not desirable. They tend to kink, are vulnerable to mistreatment. When long lengths must be used, be sure all connections are tight and ensure hose is protected from being stepped on, run over, kinked or tangled. Never use wire or insulation tape to fasten hose to connections nor to couple lengths of hose. Use only suitable hose connections and couplings.

Protect hose from sparks, hot slag, hot edges or open flames. Keep hose away from grease and oil. All new hose should be blown out before connecting welding equipment to remove, talc, dust or water. Do not crimp hose to stop flow of gases temporarily when, for example, changing blowpipe. Red hose should always be used for fuel gas blue hose for oxygen. Use only hose designed especially for oxygen and fuel gases.

Hose specially manufactured for the purpose should only be used in cases where it may come into contact with liquid LP gas, such as when used with cylinders fitted with an eductor tube.

Purge each length of hose before lighting the blowpipe. In other words, when hose is to be reconnected, treat it as you would new hose; before lighting up, pass through it some of the gas with which it is to be used.

Examine all hose periodically for leaks, worn parts, and loose connections. Test for leaks by immersing the hose in water. Carry out this test at normal working pressures. Should leaks or worn parts be found, at once cut out the section containing them. Remake joints with suitable hose couplings. Never use a steel or copper pipe to make a joint- either temporary or permanent. Do not try to repair hose with tape. If hose is burned in a flashback, discard that length of hose. Flashbacks may burn inner walls, making hose unsafe or cause further instability to the blowpipe equipment by blockage.

1.09 FLASHBACK ARRESTORS

All oxygen - fuel systems **MUST** be fitted with minimum an AS4603 compliant flashback arrestor and a non-return valve for each gas line, taking into consideration any pressure drops experienced in all components of the assembled gas control system, at the rated flow capacity of the tip or nozzle in use.

Contact your nearest distributor for advice on the correct type of flashback arrestors that should be fitted to cater for your application(s)

1.10 SETTING UP

Ensure that your equipment, hands and gloves are clean and free from oil and grease. Place the oxygen and fuel gas cylinders in a clear position where oil is not likely to drip on them and where they are not likely to be knocked by moving or falling objects. Before connecting regulators to cylinders crack the cylinder valve carefully to blow out any foreign matter which might harm seats or clog orifices.



WARNING

There must always be two O Rings on the spigot end of the mixer or cutting attachment. The absence or damage of either of these O Rings allows pre-mixing and leaks of oxygen and fuel gases which can lead to flashback within the torch handle or cutting attachment.

Inspect all glands, couplings and seats to ensure that they are not scored and that they are clean. Attach the oxygen and fuel gas regulators to their respective cylinders and screw up sufficiently to prevent leaks. In tightening connections use spanners designed for the particular nut.

Make certain that the oxygen and fuel gas regulator adjusting knobs are released. Oxygen and fuel gas cylinder valves should be always opened very slowly, so that the high pressure gauge hand on the regulator moves up gradually. A rush of high pressure gas may strain the gauge mechanism. Also in the case of oxygen it may cause seat ignition and in the case of acetylene may cause decomposition. Never stand in front of regulator pressure gauge faces when opening cylinder valves. Always stand to one side.

Attach the blue oxygen hose to the regulator outlet. Screw in the oxygen regulating adjusting knob slightly in a clockwise direction and allow a small quantity of gas to blow through in order to remove dust from the regulator and French chalk from hose. Release the adjusting knob and attach the other end of the tubing to the blowpipe oxygen inlet valve which is marked "O". Repeat the above procedure with the fuel gas regulator and hose. The blowpipe fuel inlet valve is marked "F". (All fuel gas connections have L.H. threads.) After connecting your welding or cutting plant to a fuel cylinder it is recommended that the following procedure be adopted to check for leaks:

- a. Shut off the blowpipe oxygen valve.
- b. Open the oxygen cylinder valve and set the regulator to show approximately 100 kPa (15 psi) on the delivery gauge.
- c. Close the oxygen cylinder valve.
- d. Watch the cylinder pressure gauge and if pressure decreases there is a leak in the oxygen system. If no pressure drop is experienced, then there are no leaks up to the blowpipe valve.
- e. Conduct similar tests on the fuel gas system.

All that is needed to locate the leaks is a clean paint brush, water and a cake of soft soap or liquid soap to make a soapy water mixture. Close the blowpipe valve. Select a suitable size welding tip and screw it on to the blowpipe. Open the blowpipe oxygen valve and screw in the oxygen regulator adjusting knob until correct pressure shows on the delivery gauge. The equipment manufacturer's recommendations as to pressure should always be followed. Close the blowpipe oxygen valve. Repeat this operation with the fuel gas regulator adjusting knob and blowpipe fuel gas valve.

For large-flow equipment it is recommended that the pressures be set approximately on the regulator then finally adjusted by briefly opening each blowpipe valve. Improper pressures prevent you doing your best work, and they can be dangerous; flashbacks can be caused by improper pressures. Use the pressure chart as a guide to correct pressure for your jobs. Maximum safe working pressure for acetylene is 150 kPa (21 psi).

1.11 PURGING BEFORE LIGHTING UP

After connecting welding or cutting apparatus to oxygen and fuel gas cylinders or when starting to re-use the apparatus after an interval of 1/2 hour or more, each gas should be allowed to flow through its respective tube separately for a few seconds so as to purge the tubes of any mixture of gases. This operation should not be performed in a confined space



WARNING

A damaged seating surface on either the tip or the head can create a dangerous condition and result in a fire or backflash

that may damage the cutting attachment. If the seating surface of the tip becomes damaged, don't use it. Discard the damaged tip. If the head requires repair, take the torch to an accredited repairer.

1.12 SAFETY PRECAUTIONS

1. Check "O" rings regularly and replace if worn or damaged (see "O ring" kits under servicing section).
2. Do not allow oil or grease to come into contact with the equipment. Oxygen can react explosively with oil or grease.
3. Do not remove regulators from cylinder valves and blowpipe from hoses without first closing cylinder valves and releasing the gas from the regulator, blowpipe and hoses.
4. Do not use a regulator as a control valve. When plant is not in use for any extended period of time (overnight), close cylinder valves on the cylinders and releasing the pressure from the blowpipes, regulators and hoses.
5. Do not use the Comet 3 equipment with any gas other than that for which it was designed.
6. After making any repairs or service requirements to the equipment always test to ensure correct operation.
7. Open cylinder valves slowly.
8. Ensure all connections are leak free. Never test for leaks with flame.
9. If a flashback occurs, immediately turn off the blowpipe oxygen valve, then the fuel gas valve. Allow the blowpipe and tip to cool, purge gases before relighting. If flashbacks persist shut down equipment and consult your CIGWELD service agent.

1.13 CYLINDER SAFETY

1. Trolley

The plant does not include a trolley. It is recommended that the type of design selected should incorporate the following features:

- Built in stability for safety.
- Balanced to reduce carry load.
- Full engagement of tray with base of cylinders when loading.
- Positive clamping chain that securely positions and holds cylinders.

2. Cylinders

Place cylinders onto trolley and positively secure into position. Tighten clamping chain to secure firmly in position.

3. "Cracking" the cylinders (oxygen)

Remove dust seals first. Momentarily open and then close (called "cracking") the cylinder valve before attaching the regulator - to blow out the foreign matter.



NOTE

Never "crack" a fuel gas cylinder valve near other welding works, spark or open flame.

SECTION 2: INTRODUCTION

2.01 KIT CONTENTS

STARTER KIT (OXYGEN/ACETYLENE)

P/N: 308315

P/N	DESCRIPTION
310638	COMET 700 OXYGEN REGULATOR SI
301532	COMET 700 ACETYLENE REGULATOR VI
304001	COMET 3 BLOWPIPE
304005	COMET 3 CUTTING ATTACHMENT
304002	COMET 3 MIXER TYPE 550
208512	TORCH MOUNT FLASHBACK ARRESTOR SET
208513	REGULATOR MOUNT FLASHBACK ARRESTOR SET
308693	FITTED TWIN HOSE OXY/ACET 5mm, 5m
306047	TYPE 41 CUTTING NOZZLE, SIZE 8
306048	TYPE 41 CUTTING NOZZLE, SIZE 12
307001	TYPE 551 WELDING TIP, SIZE 10
307002	TYPE 551 WELDING TIP, SIZE 12
454031	GAS WELDING GOGGLES
308789	FLINT LIGHTER
309258	COMBINATION SPANNER
308036	TIP CLEANER
	COMET SAFE CASE



PROFESSIONAL PLUS KIT (OXYGEN/ACETYLENE)

P/N: 308313

P/N	DESCRIPTION
310638	COMET 700 OXYGEN REGULATOR SI
301532	COMET 700 ACETYLENE REGULATOR VI
304001	COMET 3 BLOWPIPE
304005	COMET 3 CUTTING ATTACHMENT
304002	COMET 3 MIXER TYPE 550
208512	TORCH MOUNT FLASHBACK ARRESTOR SET
208513	REGULATOR MOUNT FLASHBACK ARRESTOR SET
308694	FITTED TWIN HOSE OXY/ACET 5mm, 10m
306046	TYPE 41 CUTTING NOZZLE, SIZE 6
306047	TYPE 41 CUTTING NOZZLE, SIZE 8
306048	TYPE 41 CUTTING NOZZLE, SIZE 12
306049	TYPE 41 CUTTING NOZZLE, SIZE 15
307000	TYPE 551 WELDING TIP, SIZE 8
307001	TYPE 551 WELDING TIP, SIZE 10
307002	TYPE 551 WELDING TIP, SIZE 12
307003	TYPE 551 WELDING TIP, SIZE 15
307004	TYPE 551 WELDING TIP, SIZE 20
454031	GAS WELDING GOGGLES
308789	FLINT LIGHTER
309258	COMBINATION SPANNER
308036	TIP CLEANER
308729	ROLLER GUIDE
308752	RADIUS BAR AND PIVOT
	COMET SAFE CASE



STARTER KIT (OXYGEN/LPG)

P/N: 308316

P/N	DESCRIPTION
310638	COMET 700 OXYGEN REGULATOR SI
301525	COMET 500 LPG REGULATOR SI
304001	COMET 3 BLOWPIPE
304005	COMET 3 CUTTING ATTACHMENT
304002	COMET 3 MIXER TYPE 550
208512	TORCH MOUNT FLASHBACK ARRESTOR SET
208513	REGULATOR MOUNT FLASHBACK ARRESTOR SET
308755	FITTED TWIN HOSE OXY/LPG, 5mm, 5m
306026	TYPE 44 CUTTING NOZZLE, SIZE 8
306028	TYPE 44 CUTTING NOZZLE, SIZE 12
307068	TYPE 554 BRAZING TIP, SIZE 8
307059	TYPE 554 BRAZING TIP, SIZE 15
454031	GAS WELDING GOGGLES
308789	FLINT LIGHTER
309258	COMBINATION SPANNER
308036	TIP CLEANER
	COMET SAFE CASE



CUTTING & GOUGING KIT (OXYGEN/LPG)

P/N: 308394

P/N	DESCRIPTION
310638	COMET 700 OXYGEN REGULATOR SI
301525	COMET 500 LPG REGULATOR SI
204037	MULTIPURPOSE CUTTING TORCH 90° HEAD (530mm)
208518	TORCH MOUNT MID FLOW FLASHBACK ARRESTOR SET
208513	REGULATOR MOUNT FLASHBACK ARRESTOR SET
308986	FITTED TWIN HOSE OXY/LPG, 5mm, 10m
306030	TYPE 44 CUTTING NOZZLE, SIZE 20
306033	TYPE 44 GOUGING NOZZLE, SIZE 32GS
454031	GAS WELDING GOGGLES
308789	FLINT LIGHTER
309258	COMBINATION SPANNER
308036	TIP CLEANER
308729	ROLLER GUIDE
	COMET SAFE CASE



2.02 GAS REQUIREMENTS

The COMET gas kits are available in Oxygen/Acetylene and Oxygen/LPG. Cylinders of these gases are available in various sizes dependent upon your usage requirements. Your local gas distributor will be able to assist in obtaining the suitable grades of gases and cylinder sizes required for this kit.

For correct and safe operation it is essential that only regulators, hoses, nozzles and tips compatible with the chosen fuel gas be used. Please consult your distributor should you wish to change to an alternate fuel gas.

SECTION 3: INSTALLATION

3.01 FITTING REGULATORS TO CYLINDERS

1. Place Cylinders in intended position ready for use. Secure firmly in position.
2. Momentarily open and then close (called “cracking”) the cylinder valve before attaching the regulator to blow out foreign matter. (Figure 1)



Figure 1

3. Place the inlet of the Oxygen regulator (colour coded black) onto the cylinder valve of the black Oxygen cylinder. Tighten the nut on the oxygen regulator inlet using the combination spanner supplied. The nut is right hand (RH) threaded and needs to be turned in a clockwise direction in order to tighten. (Figure 2)



Figure 2

4. Place the inlet of the Acetylene regulator (colour coded red) or LPG regulator (colour coded orange) onto the cylinder valve. Tighten the nut on the regulator inlet using the combination spanner supplied. The nut is left hand (LH) threaded and needs to be turned in an anti-clockwise direction in order to tighten. (Figure 3)



Figure 3

3.02 FITTING FLASHBACK ARRESTORS TO REGULATORS

1. Ensure cylinder valves are closed and all pressure is released from the system before fitting flashback arrestors.
2. Check the direction-of-flow arrow marked on the flashback arrestor body. The arrow must point away from the regulator and toward the hose.
3. Attach the Oxygen regulator mounted flashback arrestor to the outlet of the Oxygen regulator. Tighten securely using the combination spanner supplied. The Oxygen fitting is right hand (RH) threaded and is tightened by turning clockwise. (Figure 4)
4. Attach the Fuel flashback arrestor to the outlet of the Acetylene or LPG regulator. Tighten securely using the correct spanner. Fuel gas fittings are left hand (LH) threaded and are tightened by turning anticlockwise. (Figure 5)
5. Ensure all fittings are firm and correctly aligned without overtightening.



Figure 4



Figure 5

3.03 FITTING HOSES TO FLASHBACK ARRESTORS (REGULATOR END)

1. Connect the blue hose (part of twin fitted hose assembly) to the Oxygen flashback arrestor mounted to the regulator. (Figure 6) Tighten securely using the correct spanner. The Oxygen fitting is right hand (RH) threaded and is tightened by turning clockwise.
2. Connect the red or orange gas hose (part of twin fitted hose assembly) to the Fuel flashback arrestor mounted to the regulator. (Figure 7) Tighten using the correct spanner. Fuel gas fittings are left hand (LH) threaded and are tightened by turning anticlockwise.



Figure 6



Figure 7

3.04 FITTING FLASHBACK ARRESTORS TO TORCH

1. Check the direction-of-flow arrow marked on the flashback arrestor body. The arrow must point away from the hose and toward the torch.
2. Connect the Oxygen torch mount flashback arrestor to the Oxygen inlet connection of the torch (marked 'O'). Tighten the nut using the combination spanner supplied. The nut is right hand (RH) threaded and needs to be turned in a clockwise direction in order to tighten. (Figure 8)
3. Connect the Fuel torch mount flashback arrestor to the Fuel inlet of the torch (marked 'F'). Tighten the nut using the combination spanner supplied. The nut is left hand (LH) threaded and needs to be turned in an anti-clockwise direction in order to tighten. (Figure 9)



Figure 8



Figure 9

3.05 FITTING HOSES TO FLASHBACK ARRESTORS (TORCH END)

1. Connect the blue hose (part of twin fitted hose assembly) to the Oxygen torch end flashback arrestor. Tighten the nut using the combination spanner supplied. The nut is right hand (RH) threaded and needs to be turned in a clockwise direction in order to tighten. (Figure 10)
2. Connect the red hose for Acetylene or Orange hose for LPG (part of twin fitted hose assembly) to the Fuel torch end flashback arrestor. Tighten the nut using the combination spanner supplied. The nut is left hand (LH) threaded and needs to be turned in an anti-clockwise direction in order to tighten. (Figure 11)



Figure 10



Figure 11

3.06 WELDING & BRAZING ASSEMBLY

1. Connect the welding mixer onto the blowpipe until hand tight. (Figure 12)
2. Screw the selected welding/brazing tip into the welding mixer until hand tight. (Figure 13)
3. Loosen the connection between the blowpipe and the welding mixer. Align the welding tip with the blowpipe to obtain the best working position to suit you and then re-tighten to hand tight.



Figure 12



Figure 13

3.07 CUTTING & GOUGING ASSEMBLY

1. If changing from welding to cutting, remove the welding mixer and tip from the blowpipe.
2. Connect the cutting attachment to the blowpipe. Align the head of the cutting attachment with the blowpipe and hand tighten. (Figure 14)
3. Select the correct size cutting nozzle for the application intended.
4. Assemble the cutting nozzle with the nozzle retaining nut and screw into the cutting attachment. (Figure 15)
5. Tighten nozzle retaining nut with spanner provided. (Figure 16)
6. Repeat from step 3 onwards if using the multipurpose torch.



Figure 14



Figure 15



Figure 16

3.08 TESTING FOR LEAKS (BLOWPIPE)

1. After assembly and before lighting up and using your welding or cutting plant, it is recommended that the following procedure be adopted to check for leaks.
2. Close the blowpipe oxygen valve
3. Open the oxygen cylinder valve slowly and set the regulator to show approximately 100 kPa on the delivery gauge
4. Close the oxygen cylinder valve
5. Watch the cylinder pressure gauge and if the pressure decreases there is a leak in the oxygen system. If no pressure drop is experienced, then there are no leaks up to the blowpipe valve
6. Open blowpipe oxygen valve to release oxygen gas pressure from the system
7. Release regulator control knob to fully out position
8. Close blowpipe oxygen valve
9. Repeat test for the fuel gas system
10. All that is needed to locate the leak(s) is a suitable leak detection solution or soapy water.

3.09 TESTING FOR LEAKS (MULTIPURPOSE TORCH)

After assembly and before lighting up and using the multipurpose cutting torch, the system needs to be tested for leaks.

Assuming that the oxygen and fuel regulators are both in good working order and have been tested for leaks, the rest of the system should be tested as follows:

1. Firmly close the oxygen and fuel control valves on the multipurpose cutting torch (refer to diagram).
2. Back off fully the oxygen and fuel regulator pressure adjusting knobs (i.e. ANTI-CLOCKWISE).
3. Open both the oxygen and fuel cylinder valves slowly (or point valves in the case of a reticulated system).
4. Adjust both the oxygen and fuel regulators to the required operating pressures. (Refer to "Operating Conditions")
5. Test for leaks using a suitable leak detection solution or soapy water at the following points.
 - i. Oxygen and fuel hose connection to regulators.
 - ii. Oxygen and fuel hose connections to cutting torch.
 - iii. Oxygen and fuel control valves (in the fully closed position).
 - iv. Between the nozzle nut and the cutting torch head with gas flowing.
6. Close both cylinder valves
7. Open the close fuel control valve to release pressure from the system.
8. Open and close oxygen control valve to release pressure from the system



WARNING

This test should be done quickly, and it is important that there are no sources of ignition present during this process, as a certain amount of Oxygen and Fuel gas will be released to the atmosphere. If no leaks are detected, the system is ready for use. If any leaks are detected on the blowpipe, it should be returned to the distributor from which it was purchased. If leaks are detected elsewhere in the system, then the joint should be re-tightened and re-tested, or the leaking item replaced.

SECTION 4: LIGHTING UP / CLOSING DOWN PROCEDURE

4.01 LIGHTING UP PROCEDURE: WELDING & BRAZING

1. Release the fuel regulator adjusting knob before opening the cylinder valve. (Figure 17)
Repeat procedure for the oxygen regulator.



Figure 17

2. Open both cylinder valves slowly, fuel (Figure 18) and oxygen (Figure 19).
If this is done suddenly, it is possible to damage the regulator.



Figure 18



Figure 19

3. Adjust the fuel regulator to the required pressure as indicated on the gauge dial (Figure 20) (For more exact settings refer to the data charts.) With the fuel gas valve (red) on the blowpipe open, (Figure 21), adjust the fuel gas knob on the regulator. (Figure 20) Repeat procedure for the oxygen side.
4. Allow a small quantity of gas to flow through each hose to (purge) clean the passage. This must be done one at a time ensuring each valve is closed before opening the other. Then close the blowpipe valves again.
5. Slightly open the fuel valve (red) on the blowpipe, pause for a few seconds, then light using the lighter provided.
6. Adjust the fuel valve (red) until the flame just ceases to smoke. When the correct fuel flame has been obtained open the oxygen valve (blue) and adjust for a neutral flame as shown in (Figure 22)



Figure 20

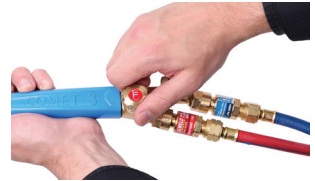
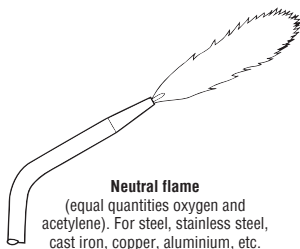
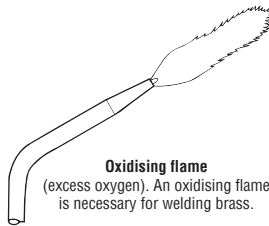


Figure 21

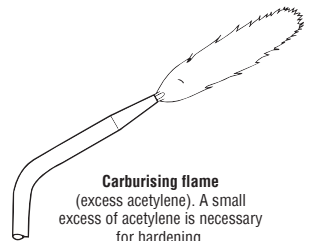
**Neutral flame**

(equal quantities oxygen and acetylene). For steel, stainless steel, cast iron, copper, aluminium, etc.

Figure 22

**Oxidising flame**

(excess oxygen). An oxidising flame is necessary for welding brass.

**Carburising flame**

(excess acetylene). A small excess of acetylene is necessary for hardening.

**NOTE**

If flame will not ignite check light up procedure. A neutral flame is where equal amounts of oxygen and fuel are being burned at the same rate and will be evident by the white cone being clearly defined with the merest trace of fuel haze. Excess fuel will produce a lengthened inner cone while excess oxygen will give the flame a pale colour and may cause the tip to "POP". This will affect the quality of the weld. For bronze welding an oxidation flame is required and will be necessary to reduce the amount of fuel until the correct flame is obtained. For other applications a carburising flame may be required. This can be achieved by increasing the flow of fuel until a haze or feather of fuel is evident at the end of the white cone.

4.02 CLOSING DOWN PROCEDURE: WELDING & BRAZING

1. Close fuel blowpipe valve (red) (Figure 23) followed by the oxygen blowpipe valve (blue). (Figure 24)



Figure 23

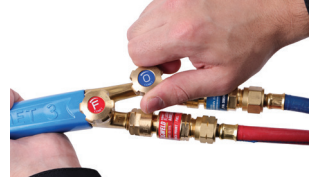


Figure 24

2. Turn off the fuel cylinder (Figure 25). Repeat for the oxygen cylinder.
3. Open the blowpipe valves one at a time, fuel first in order to relieve pressure in the blowpipe, hoses and regulators- then close the blowpipe valves. (Figure 26 & 27)
4. Release fuel and oxygen regulator control knobs. (Figure 28 & 29)



Figure 25



Figure 26



Figure 27



Figure 28



Figure 29

4.03 LIGHTING UP PROCEDURE: CUTTING & GOUGING

1. Release the regulator adjusting knob before opening the cylinder valve. (Figure 17)
2. Open both cylinder valves slowly (Figure 18 or 19). If this is done suddenly it is possible to damage the regulator.
3. Adjust the fuel regulator to the required pressure indicated on gauge dial (Figure 30) (For more exact settings refer to the data charts.) With the fuel gas valve (red) on the blowpipe open, (Figure 31), adjust the fuel gas knob (red) on the regulator (Figure 30). Close the fuel gas valve on the blowpipe. (Figure 31)
4. Open the oxygen control valve (blue) fully (Figure 32) on the blowpipe.
5. Adjust the oxygen regulator to the required pressure indicated on gauge dial. (For more settings refer to the data charts.) With the control valve on the cutting attachment open (blue) (Figure 33) adjust the control knob on the oxygen regulator. Close the oxygen control valve on the cutting attachment. (Figure 33)
6. Allow a small quantity of gas to flow through each hose to clean (purge) the passage. This must be done one at a time ensuring each valve is closed before opening the other. Then close the blowpipe valves again.
7. Slightly open the fuel valve (red) on the blowpipe, pause for a few seconds, then light using the lighter provided. Adjust the flame until it just ceases to smoke.
8. When the correct pre-heating fuel flames have been obtained, open the OXYGEN valve (blue) on the cutting attachment and adjust for a neutral flame (white cones clearly defined with the merest trace of fuel haze) (Figure 34). Unequal amounts of either gas will give poor cutting performance (Figure 34a & 34b).
9. Press the cutting lever on the top of the blowpipe with the thumb and readjust to a neutral flame by means of the oxygen valve (black) on the cutting attachment (Figure 33). (Step 9 cutting only).



Figure 30



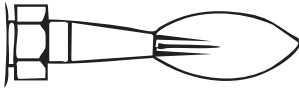
Figure 31



Figure 32

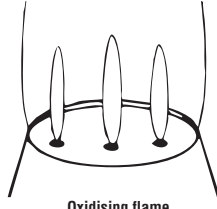


Figure 33



Neutral flame
(equal quantities oxygen
and acetylene).

Figure 34



Oxidising flame
flame excess of oxygen will
give flame a pale colour.

Figure 34a



Carburising flame
excess of acetylene will produce
lengthened inner cone.

Figure 34b

4.04 CLOSING DOWN PROCEDURE: CUTTING & GOUGING

1. Close fuel blowpipe valve (red) (Figure 35) followed by the oxygen blowpipe valve (blue). (Figure 36)
2. Turn off the fuel cylinder (Figure 37). Repeat for the oxygen cylinder.
3. Open the blowpipe valves one at a time, fuel first, in order to relieve pressure in the blowpipe, hoses and regulators (Figure 38) - then close the blowpipe valves. (Figure 39) Close the cutting attachment control valve. (Figure 40)
4. Release regulator control knobs on both fuel (Figure 41) and oxygen. (Figure 42)



Figure 35



Figure 36



Figure 37



Figure 38



Figure 39



Figure 40



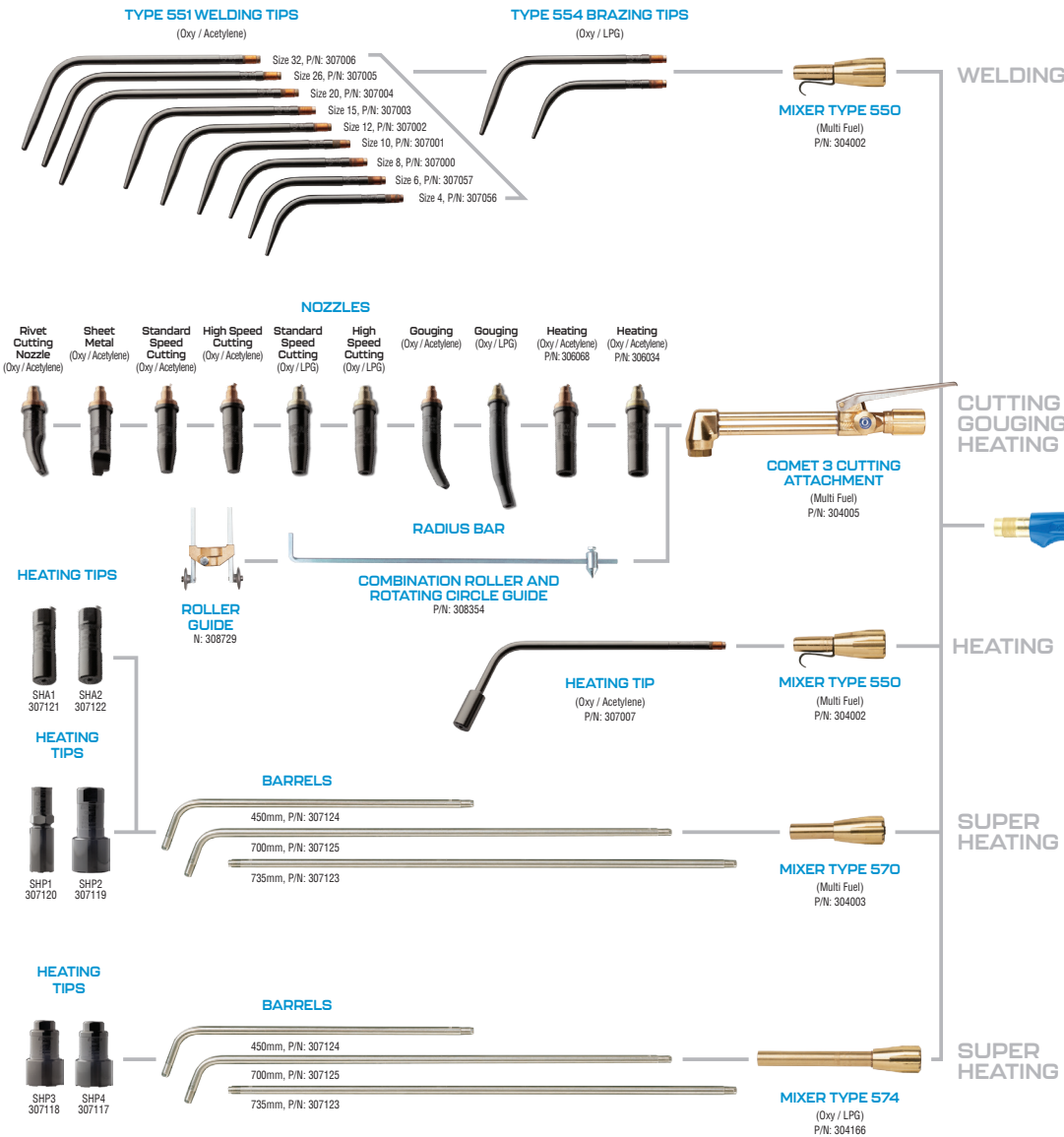
Figure 41



Figure 42

4.05 RANGE OF ACCESSORIES

GAS EQUIPMENT RANGE



COMET™ TORCH MOUNTED FLASHBACK ARRESTORS



Torch Mount, Oxygen
P/N: 208514



Torch Mount: Mid-Flow, Oxygen
P/N: 208519



Torch Mount: Mid-Flow
Quick Connect, Oxygen
P/N: 208367



Torch Mount:
Quick Connect, Oxygen
P/N: 208363



COMET 3
BLOWPIPE

P/N: 304001



Torch Mount, Fuel
P/N: 208515



Torch Mount: Mid-Flow, Fuel
P/N: 208520



Torch Mount: Mid-Flow
Quick Connect, Fuel
P/N: 208366



Torch Mount:
Quick Connect, Fuel
P/N: 208362

FITTED GAS HOSES



FITTED HOSE 5mm BORE

Oxy/Acetylene	
P/N	Length (m)
308692	2
308693	5
308694	10
308624	15
308815	20
308904	25

Oxy/LPG	
P/N	Length (m)
308754	2
308755	5
308986	10
308834	15
308835	20

FITTED HOSE 10mm BORE

Oxy/Acetylene	
P/N	Length (m)
308905	10
308906	15

Oxy/LPG	
P/N	Length (m)
308907	10
308908	15

COMET™ REGULATOR MOUNTED FLASHBACK ARRESTORS



F1 Max, Oxygen
P/N: 308799M



Regulator Mount:
High-Flow LP, Oxygen
P/N: 208882



Regulator Mount, Oxygen
P/N: 208516



Regulator Mount:
Quick Connect, Oxygen
P/N: 208365



Regulator Mount, Fuel
P/N: 208517



Regulator Mount:
Quick Connect, Fuel
P/N: 208364



Regulator Mount:
High-Flow LP, Fuel
P/N: 208883



F1 Max, Fuel
P/N: 308800M

COMET™ REGULATORS



COMET 700 Oxygen Regulator,
1000kPa, Type 10 Vertical Inlet
P/N: 301637



COMET 700 Oxygen Regulator,
1000kPa, Type 10 Side Inlet
P/N: 310638

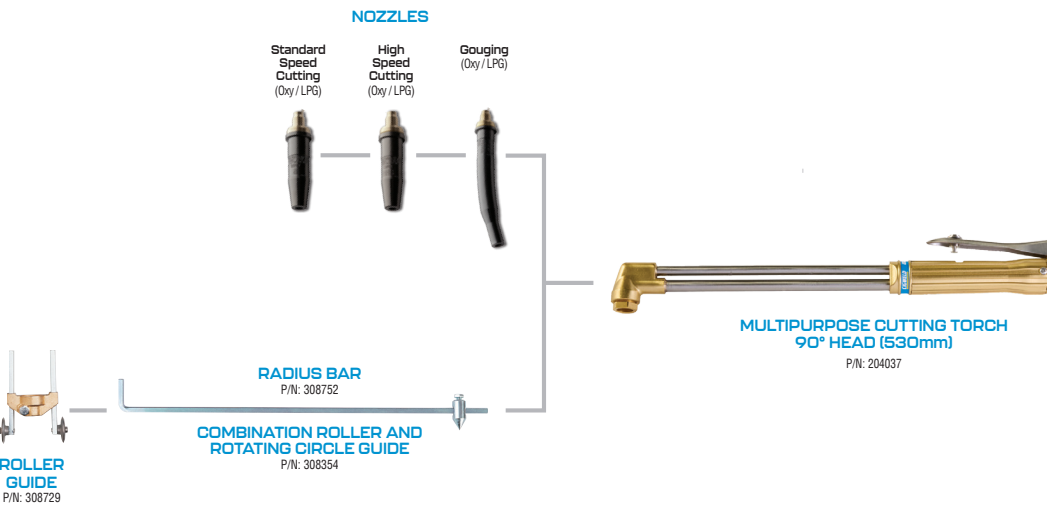


COMET 700 Acetylene Regulator,
150kPa, Type 20 Vertical Inlet
P/N: 301532



COMET 500 LPG Regulator,
400kPa, CGA 510 Side Inlet
P/N: 301525

CUTTING AND GOUGING RANGE



COMET™
TORCH MOUNTED
FLASHBACK ARRESTORS



Torch Mount, Oxygen
P/N: 208514



Torch Mount: Mid-Flow, Oxygen
P/N: 208519



Torch Mount: Mid-Flow
Quick Connect, Oxygen
P/N: 208367



Torch Mount:
Quick Connect, Oxygen
P/N: 208363



Torch Mount, Fuel
P/N: 208515



Torch Mount: Mid-Flow, Fuel
P/N: 208520



Torch Mount: Mid-Flow
Quick Connect, Fuel
P/N: 208366



Torch Mount:
Quick Connect, Fuel
P/N: 208362

FITTED GAS HOSES



FITTED HOSE
5mm BORE

Oxy/LPG	
308754	2
308755	5
308986	10
308834	15
308835	20

FITTED HOSE
10mm BORE

Oxy/LPG	
308907	10
308908	15

COMET™
REGULATOR MOUNTED
FLASHBACK ARRESTORS



F1 Max, Oxygen
P/N: 308799M



Regulator Mount:
High-Flow LP, Oxygen
P/N: 208882



Regulator Mount, Oxygen
P/N: 208516



Regulator Mount:
Quick Connect, Oxygen
P/N: 208365



Regulator Mount, Fuel
P/N: 208517



Regulator Mount:
Quick Connect, Fuel
P/N: 208364



Regulator Mount:
High-Flow LP, Fuel
P/N: 208883



F1 Max, Fuel
P/N: 308800M

COMET™ REGULATORS



COMET 700 Oxygen Regulator,
1000kPa, Type 10 Vertical Inlet
P/N: 301637



COMET 700 Oxygen Regulator,
1000kPa, Type 10 Side Inlet
P/N: 310638



COMET 500 LPG Regulator,
400kPa, CGA 510 Side Inlet
P/N: 301525

4.06 COMET 500 AND 700 REGULATORS

SAFETY PRECAUTIONS

This regulator is designed to reduce and control high pressure gas from a cylinder or pipeline to the working pressure required for the equipment using it.

If the equipment is improperly used, hazardous conditions are created that may cause accidents. It is the users responsibility to prevent such conditions. Before handling or using the equipment, understand and comply at all times with the safe practices prescribed in this instruction.

SPECIFIC PROCEDURES for the use of regulators are listed below.

- A. NEVER subject the regulator to inlet pressures greater than its rated inlet pressure.
- B. DO NOT allow oil, oil-bearing materials, or other combustibles that can ignite readily in the presence of oxygen.
- C. Use oxygen regulators with equipment suitable for and used only for oxygen service.
- D. NEVER use non-oxygen regulators in oxygen service.
- E. NEVER pressurise a regulator that has loose or damaged parts or is in a questionable condition. Never loosen a connection or attempt to remove any part of a regulator until the gas pressure has been relieved. Under pressure, gas can dangerously propel a loose part.
- F. DO NOT remove the regulator from a cylinder without first closing the cylinder valve and releasing gas in the regulator high and low pressure chambers
- G. DO NOT use the regulator as a control valve. When downstream equipment is not in use for extended periods of time, shut off the gas at the cylinder valve and release the gas from the equipment.
- H. NEVER use Acetylene at pressure in excess of 150kPa.
- I. OPEN the cylinder valve SLOWLY. Close after use.
- J. All oxygen - fuel systems MUST be fitted with minimum an AS4603 compliant flashback arrestor and a non-return valve for each gas line, taking into consideration any pressure drops experienced in all components of the assembled gas control system, at the rated flow capacity of the tip or nozzle in use.
- K. All Regulators, Flashback Arrestors, Blowpipes, Attachments, Mixers and Cutting Torches MUST be refurbished or replaced after 5-Years of service as noted in AS4839-2001.

USER RESPONSIBILITIES

This equipment will perform safely and reliably only when installed, operated and maintained, and repaired in accordance with the instructions provided. Equipment must be checked periodically and repaired, replaced, or reset as necessary for continued safe and reliable performance. Defective equipment should not be used. Parts that are broken, missing, obviously worn, distorted, or contaminated should be replaced immediately.

The user of this equipment will generally have the sole responsibility for any malfunction, which results from improper use, faulty maintenance, or by repair by anyone other than an accredited repairer.

CYLINDERS GENERAL

Industrial gas cylinders are made to rigid specifications and are inspected each time they are refilled by your supplier. They are safe if properly handled. All Government and insurance regulations relating to the storage of oxygen, acetylene and LPG cylinders should be closely observed. Keep all cylinders, empty or full, away from radiators, furnaces and other sources of heat. Also avoid contact with electrical circuits. Keep oil and grease away from cylinders. Cylinders standing in the open should be screened against direct rays of the sun. Protect cylinders valves from bumps and falling objects. Keep the valves clean, free from oil, grease and all foreign materials. Close cylinder valves when not in use, when empty, or when moving cylinders. Always remove regulators when moving cylinders. Be sure the cylinder valve is tightly closed before removing regulators. Never allow anyone to strike an arc or tap an electrode against any cylinder. Never try to fill a cylinder or mix gases in a cylinder. Never tamper with or alter cylinder numbers or markings. Never use cylinders as supports or rollers. When transporting cylinders using a crane, do not use slings- use a cylinder cradle. Never draw gas from cylinders except through properly attached pressure regulators or equipment designed for the purpose. If damaged, send the regulator to the supplier or appointed agent for repairs. If unable to make a gas-tight seal between the cylinder valve and a regulator spigot, first check whether the spigot nut is tight. If so check the regulator spigot. If the cylinder

valve is damaged notify the gas supplier. Never insert washers of lead or other material between the regulator and the cylinder valve. Never use oil or grease on these connections. Use only standard cylinder keys to open cylinder valves, never extend the length of these keys under any circumstances. If valves cannot be opened by hand, do not use a hammer or wrench; notify the supplier. Open all cylinder valves slowly. Leave cylinder key in position when fuel gas cylinder valves are open.

OXYGEN CYLINDERS

Oxygen cylinders are steel shells of ample strength for their purpose. Besides routine inspections, they periodically undergo a searching examination, which includes a hydraulic pressure test. Always call oxygen "Oxygen" not "Air". Never use oxygen in pneumatic tools, in oil pre-heating burners, to start engines, to blow out pipelines or to freshen the atmosphere in confined spaces. In short, under no circumstances use oxygen as a substitute for compressed air or other gases.

ACETYLENE CYLINDERS

Acetylene cylinders contain porous material, which is impregnated with acetone. The acetylene is dissolved under pressure in this acetone. All acetylene cylinders are fitted with fusible plugs. These are designed to vent the cylinder contents in the event of an unsafe condition arising in the cylinder due to any cause such as overheating or decomposition arising from either incorrect operating technique, faulty equipment alone, or in conjunction with excessive temperature. In the event of a safety device functioning, always notify the supplier. The reason for the device operating always warrants special investigation. Always call acetylene "acetylene" not Gas. Always keep acetylene cylinders upright, whether in use or in store, full or empty. Always keep acetylene cool, store them upright in a well-protected, well ventilated dry location, away from highly combustible materials and oxygen cylinders. Should an acetylene valve leak around the spindle, close the valve and tighten the gland. If this fails, or if the fusible plug is leaking, remove cylinder to open air. Keep the cylinder well away from anything which could possibly set the escaping acetylene on fire. Tag the cylinder to explain the trouble. Notify suppliers at once. If acetylene, escaping from a leaking cylinder valve gland or from an improperly seated regulator spigot ignites, immediately close the cylinder valve. If this is impossible, treat from point two below. If an acetylene cylinder is heated accidentally or becomes hot through severe flashback, or other cause, action should be taken promptly in the following manner:

1. Shut the cylinder valve
2. Clear all personal from the area
3. Cool the cylinder with a copious supply of water and notify the fire brigade



NOTE

The person directing the fire hose should be protected behind some suitable shelter. If the safety device functions and the issuing gas ignites, cool the cylinder as above, but avoid extinguishing the flames. If the escaping gas does not ignite, care must be taken to avoid an air/acetylene explosion. No source of ignition must be permitted to enter the area. Existing sources of ignition should be rendered safe.

4. Continue cooling the cylinder with copious quantities of water until it is quite cool. This may be determined by removing the cooling water at intervals and watching whether the water on the cylinder fries off, or whether the cylinder remains wet.
5. Notify the supplier
6. In cases where the supplier's representative is unavailable or cannot reach the scene of the incident within half an hour, the cylinder may after this period be removed carefully to an open space away from buildings and any source of ignition provided it remains cool and wet.
7. The cylinder valve should then be opened until the cylinder is empty. During this period a copious quantity of water should be poured on the cylinder.
8. When the cylinder is empty check whether the cylinder is cool, if so, close the valve.

INSTALLATION

1. Remove cylinder valve plastic dust seal. Clean the cylinder valve outlet of impurities that may clog orifices and damage seats before connecting the regulator, by cracking the valve (open then close) momentarily, pointing the outlet away from people and sources of ignition. Always crack a fuel gas valve in a well ventilated area and never near a source of ignition. (Figure 1)
2. Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree and that the regulator inlet and cylinder outlet match. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.
3. Connect the regulator inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable spanner. (Figure 2)
4. Connect and tighten the outlet hose firmly and attach down-stream equipment.
5. To protect sensitive down-stream equipment a separate safety device may be necessary if the regulator is not fitted with a pressure relief device. (Figure 3)



Figure 1



Figure 2



Figure 3

OPERATION

With the regulator connected to cylinder or pipeline, and the adjustment screw/knob fully disengaged, pressurise as follows:

1. Stand to one side of regulator and slowly open the cylinder valve. If opened quickly, a sudden pressure surge may damage internal regulator parts. (Figure 4)
2. With valves on downstream equipment closed, adjust regulator to approximate working pressure. It is recommended that testing for leaks at the regulator connection points be carried out using a suitable leak detection solution or soapy water.
3. Purge air or other unwanted gas from equipment connected to the regulator by individually opening then closing the equipment control valves. Complete purging may take up to ten seconds or more, depending upon the length and size of the hose being purged.



Figure 4

CAUTION

DO NOT purge oxidising or flammable gases in the presence of flame, lighted cigarettes, or other sources of ignition or in a confined space. Open each downstream valve in turn, if more than one regulator is used. Close one valve before opening the next one. This procedure will prevent explosive gas mixtures occurring in the welding hose between regulators and equipment.

Close equipment valve(s) after purging, and test all connections for leaks with a suitable leak detection solution or soapy water. Never use a flame when testing for leaks.

ADJUSTING PRESSURE

With the regulator ready for operation, adjust working pressure as follows:

1. Slowly turn adjusting screw/knob in (clockwise) direction until the outlet gauge indicates the required pressure. All valves downstream of the regulator must be opened to obtain a true working pressure reading on the outlet gauge. Close the valves after the pressure has been set. (Figure 5)
2. To reduce pressure, allow the gas to discharge from regulator by opening the downstream valve. Bleed gas into a well ventilated area and away from any ignition source. Turn adjusting screw counter clockwise, until the required pressure is indicated on the gauge. Close downstream valve. (Figure 6)



Figure 5



Figure 6

SHUTDOWN

Close cylinder valve whenever the regulator is not in use. To shut down for extended periods (more than 30 minutes).

1. Close cylinder or upstream valve tightly. (Figure 7)
2. Open downstream equipment valves to drain the lines. Bleed gas into a well ventilated area and away from any ignition source.
3. After gas is drained completely, disengage adjusting screw and close downstream equipment valves.
4. Before transporting cylinders that are not secured on a cart designed for such purposes, remove regulators. (Figure 8)



Figure 7



Figure 8

NOTES FOR CARBON DIOXIDE (CO₂) REGULATORS



WARNING

CO₂ IS ASPHYXIATING IN HIGH CONCENTRATION. LOCATE REGULATOR IN A WELL VENTILATED AREA.

CO₂ regulators are fitted with pressure relief valves to protect the regulator against minor component failures. It cannot be considered a safety device for the protection of downstream attached equipment. The pressure relief valve is not intended to replace a primary pressure relief valve or bursting disc as may be required by local legislation. To reduce the risk of asphyxiation due to the concentration of CO₂ resulting from leaks or discharge through pressure relief valves, equipment should be located in a well ventilated area.



**READ AND UNDERSTAND THE OPERATING MANUAL
BEFORE INSTALLING OR OPERATING. PROTECT YOURSELF
AND OTHERS!**

4.07 WELDING & BRAZING PROCESSES

Before commencing to weld, an operator must know the type of material to be welded and must then:

- 1. Decide which welding process is to be used.
- 2. Choose the correct filler rod and flux.
- 3. Select a welding tip of adequate flame capacity for the thickness of material to be welded.
- 4. Set the correct flame adjustment.
- 5. Prepare the edges of the material for welding and apply flux when and where required.
- 6. Use a welding technique suited to the type, thickness and position of the material.
- 7. Remove any residual flux from the finished weld.

The tables following will be of considerable assistance. The information they contain is based on actual practice.

TABLE I - The more commonly encountered metals and alloys and recommended gas welding processes, flame adjustments, filler rods and fluxes.

TABLE II - Preparation, filler rod diameter and blowpipe acetylene consumption for each metal and thickness.

TABLE III - Fluxes and how they are best applied, with recommendations for methods of removal after welding.

TABLE IV - Filler rods with rod details, including identification add sizes available.

TABLE V - Details of COMET 3 blowpipe. Use in conjunction with Table II to enable the correct nozzle or tip to be chosen.

RECOMMENDED OXY-ACETYLENE WELDING PROCESSES TABLE I

METAL	PROCESS	FLAME	FILLER ROD	FLUX
IRON				
Wrought Iron	Fusion Weld	Neutral	COMWELD Mild Steel	None
	Braze Weld	Slightly Oxidising	BlueStrike Manganese Bronze	BlueStrike Copper and Brass
Low Carbon Iron	Fusion Weld	Neutral	COMWELD Mild Steel	None
	Braze Weld	Slightly Oxidising	BlueStrike Manganese Bronze	BlueStrike Copper and Brass
Galvanised Iron	Braze Weld	Slightly Oxidising	BlueStrike Manganese Bronze	BlueStrike Copper and Brass
CARBON STEELS				
Low Carbon (M.S.) (Up to .30%C.)	Braze Weld	Slightly Oxidising	BlueStrike Manganese Bronze	BlueStrike Copper and Brass
Medium Carbon (.30% to .50%C.)	Fusion Weld	Slightly Carburising	COMWELD Super Steel	None
	Braze Weld	Slightly Oxidising	BlueStrike Nickel Bronze	BlueStrike Copper and Brass
High Carbon (.50% to .90%C.)	Braze Weld	Slightly Oxidising	BlueStrike Nickel Bronze	BlueStrike Copper and Brass
Tool Steel (.80% to 1.50%C.)	Braze Weld	Slightly Oxidising	BlueStrike Nickel Bronze	BlueStrike Copper and Brass
CAST STEELS				
Plain Carbon (Up to 0.25%C.)	Fusion Weld	Neutral	COMWELD High Test	None
	Braze Weld	Slightly Oxidising	BlueStrike Manganese Bronze	BlueStrike Copper and Brass
Low Alloy	Fusion Weld	Neutral	COMWELD Super Steel	None
	Braze Weld	Slightly Oxidising	BlueStrike Nickel Bronze	BlueStrike Copper and Brass

METAL	PROCESS	FLAME	FILLER ROD	FLUX
LOW ALLOY HIGH TENSILE STEELS				
General	Fusion Weld	Neutral	COMWELD Super Steel	None
Manganese Alloy Steels	Fusion Weld	Neutral	COMWELD Super Steel	None
STAINLESS STEELS				
Molybdenum Bearing	Fusion Weld	Strictly Neutral	COMWELD 316L Stainless Steel	Stainless Steel
COPPER AND COPPER ALLOYS				
Commercial Bronze and Low Brass	Fusion Weld	Slightly Oxidising	BlueStrike TOBIN Bronze	COMWELD Copper and Brass
Spring, Admiralty and Yellow Brass	Fusion Weld	Slightly Oxidising	BlueStrike TOBIN Bronze	COMWELD Copper and Brass
Muntz Metal, Tobin Bronze, Naval Brass	Fusion Weld	Slightly Oxidising	BlueStrike TOBIN Bronze	COMWELD Copper and Brass
Nickel Silver	Fusion Weld	Neutral	BlueStrike Nickel Bronze	COMWELD Copper and Brass
Phosphor Bronze	Fusion Weld	Slightly Oxidising	BlueStrike TOBIN Bronze	COMWELD Copper and Brass
ALUMINIUM AND ALUMINIUM ALLOYS				
Aluminium Silicon Magnesium (70, 71, 80)	Fusion Weld	Neutral	COMWELD AL4043	COMWELD Aluminium
Aluminium Magnesium (75, 76, 77, or 78)	Fusion Weld	Neutral	COMWELD AL5356	COMWELD Aluminium
NICKEL				
Nickel	Fusion Weld	Neutral to Slightly Carburising	Rod or Parent Metal	None
OTHER METALS				
Lead	Fusion Weld	Neutral	Rod or Parent Metal	None
Everdur	Braze Weld	Slightly Oxidising	BlueStrike TOBIN Bronze	COMWELD Copper and Brass
Cusilman	Fusion Weld	Neutral to Slightly Oxidising	BlueStrike Silicon Bronze	COMWELD Copper and Brass
	Braze Weld	Slightly Oxidising	BlueStrike TOBIN Bronze	COMWELD Copper and Brass

WELDING DATA FOR BUTT JOINTS IN METAL SHEET AND PLATE TABLE II

TECHNIQUE	POSITION	METAL THICKNESS (MM)	FILLER ROD DIAMETER (MM)	MILD STEEL CONSUMPTION (L/MIN)	CUSILMAN ALUMINIUM MONEL CONSUMPTION (L/MIN)	INCONEL STAINLESS STEEL CONSUMPTION (L/MIN)	ALUMINIUM ALLOYS MAGNESIUM ALLOYS CONSUMPTION (L/MIN)	BRASS NICKEL CONSUMPTION (L/MIN)	COPPER CONSUMPTION (L/MIN)
DOWNHAND	FOREHAND	0.8	1.5	1.5	1.5	1.2	0.9	2	3.2
		1.6	1.6	2.5	2.5	2.2	1.8	3.8	5.5
		2.5	1.6	3.5	3.5	2.8	2.2	4.2	7
		3	2.4	5.5	5.5	4.5	3.5	7	11.5
		4	2.4	6.5	6.5	5.5	4	8.5	17.5
		5	3.2	8	8	6.5	5.5	10	22.5
		6	5	10.5	10.5	8.5	7	13.5	27.5
	BACKHAND	5	3	13	-	-	-	-	-
		6.3	5	16	-	-	-	-	-
		8	5	19	-	-	-	-	-
		10	5	21	-	-	-	-	-
		13	6.3	27	-	-	-	-	-
		16	6.3	33	-	-	-	-	-
VERTICAL	1 OPERATOR	1.5	1.6	1.5	1.5	1	0.8	1.8	3.2
		3	1.6	2.5	2.5	2	1.8	3.2	6.5
		5	2.4	4	4	3	2.5	5	9
	2 OPERATORS	5	2.4	2	2.2	2	1.2	3	4.5
		6	3.2	2.5	2	2.5	1.8	3.8	5.5
		10	3.2	4	3.5	3.5	2.8	6.5	9
		13	5	6	5.5	5	4	9	13.5
		16	5	8	7	6.5	5	10.5	18

* Over 3.0mm thick copper, it is usual to use some form of preheating.
Heavier section filler rods, particularly for non-ferrous metals, are sometimes used.

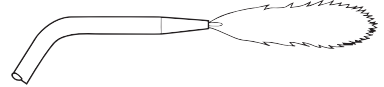
FLAME ADJUSTMENT - OXY-ACETYLENE

Accurate flame adjustment is a most important factor in making a success of oxy-acetylene welding. There are three types of flame adjustment: neutral; oxidising (excess oxygen); and reducing or carburising (excess acetylene).

The neutral flame is used for the majority of welding requirements.

NEUTRAL FLAME

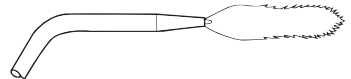
Set the pressures at the regulators to suit the size of tips fitted to the blowpipe (Table III). Open the blowpipe acetylene valve and light the issuing gas. Increase the valve opening until the flame no longer smokes. Then open the oxygen valve slowly. The flame will change in colour from yellow to blue and will show the characteristics of the reducing or carburising flame. Continue to open the oxygen valve until the secondary cone just disappears. Then increase the acetylene until a faint flicker appears at the end of the inner luminous cone. This indicates that the flame is just beginning to become carburising and is the best indication the welder can have that the flame is not oxidising.



NEUTRAL FLAME
(Equal quantities oxygen and acetylene)
For steel, stainless steel, cast iron, copper, aluminium, etc.

OXIDISING FLAME

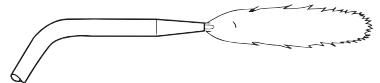
Usually obtained by setting neutral flame as above, then reducing the acetylene. This shortens the inner cone and the amount of excess oxygen can be judged by the shortness of the cone compared with the length of the neutral cone.



OXIDISING FLAME
(Excess oxygen) An oxidising flame is necessary for welding brass

CARBURISING OR REDUCING FLAME

This is obtained by opening the acetylene valve further than required for the neutral setting. The luminous inner cone becomes ragged and as the acetylene increases the flame changes in appearance and through welding goggles three parts will be easily recognisable; an intense but feathery edged inner cone, surrounded by a luminous secondary cone and a bluish outer envelope forming a third zone. The amount of excess acetylene is usually judged by the ratio of the length of the secondary luminous cone to the length of the neutral cone.



CARBURISING FLAME
(Excess acetylene) A small excess of acetylene is necessary for Hard facing

FLAME ADJUSTMENT - OXYGEN LPG

For efficient combustion of LPG, four volumes of oxygen are required from the oxygen cylinder for each volume of LPG. A flame with this gas ratio will provide the high flame temperature required and efficient heat input without wasteful combustion of oxygen. This flame will have the appearance of a highly oxidising oxy-acetylene flame, but is nominally neutral.

The flame setting is obtained in the following manner: After lighting up and obtaining a flame of sufficient

size, the blowpipe oxygen valve is gradually opened, increasing the flow of oxygen. It will be noticed that as more oxygen is introduced, the length of the inner cones will shorten until when a ratio of oxygen and fuel gas of approximately 3.8:1 is obtained, the length of the inner cones remain constant.

A slight increase of oxygen flow should then provide a 4:1 ratio. The inner cones are bluish in colour, are pointed and the flame has a roaring sound.

FLUXES TABLE III

APPLICATION	FLUX AND USE	REMOVAL
ALUMINIUM. Fusion welding of sheet and cast aluminium and weldable aluminium and weldable aluminium alloys.	Dip heated rod into flux and apply to job.	1. Dilute nitric acid dip, followed by: (a) Cold rinse and then: (b) Hot rinse; or 2. Wire brush and hot water or steam.
ALUMINIUM BRAZING. Brazing sheet, tube, plate and structural shapes in aluminium and aluminium alloys.	Apply paste to job and rod.	1. Grinding wheel or wire brush and water; or 2. Sandblast; or 3. * Dilute hydrochloric or nitric acid dip.
BRONZE. Braze welding and re-surfacing of cast iron.	Dip heated rod into flux and apply to job.	1. Grinding wheel or wire brush and water; or 2. Sandblast; or 3. * Dilute hydrochloric or nitric acid dip.
BRONZE TINNING. Used in association with bronze flux for tinning dirty cast iron.	Dip heated rod into flux and apply to job.	1. Grinding wheel or wire brush and water; or 2. Sandblast; or 3. * Dilute hydrochloric or nitric acid dip.
CAST IRON. Fusion welding of cast iron.	Dip heated rod into flux and apply to job.	1. Grinding wheel or wire brush and water; or 2. Sandblast; or 3. Dilute hydrochloric or nitric acid dip.
COPPER AND BRASS. Fusion welding of copper, brass and bronze. Braze welding and brazing of copper and steel.	Dip heated rod into flux and apply to job. For brazing application mix with water to form paste and apply to job and rod.	1. Grinding wheel or wire brush and water; or 2. Sandblast; or 3. * Dilute hydrochloric or nitric acid dip.
STAINLESS STEEL. Fusion welding of all corrosion-resistant steels of the chromium-nickel series	Mix with alcohol or water to form paste. Apply to job and rod.	1. Grinding wheel or wire brush and water; or 2. Sandblast; or 3. Dilute hydrochloric or acid dip; or hydrofluoric and nitric acid dip at room temperature.
SILVER BRAZING FLUX No. 2. Used Silver Brazing Alloys, 242, 245, 250, on carbon and stainless steels, nickel alloys, copper and brass. Dissimilar metals in the above groups can be brazed.	Apply paste to job and rod before commencing to braze	1. Hot dilute caustic soda dip; or 2. Wire brush and hot water; or 3. Wire brush and steam.
SILVER BRAZING FLUX GENERAL PURPOSE. Recommended to be used with SBAs 102, 105, 115, 230, 234, 235, 350, 2503 and 3402. It is an excellent flux for medium to high temperature brazing and has been specially formulated to be used for inductive brazing. With 235	Apply paste to work and rod before commencing braze. (Adequate flux is essential for proper action.)	1. Hot dilute caustic soda dip; or 2. Wire brush and hot water; or 3. Wire brush and steam.
VAPAFLUX. An efficient flux applied as vapour in the flame for braze welding steel.	Delivered to the blowpipe by means of a vapaflex Dispenser.	Usually not required or, if necessary, wipe with cloth.

*Acid solutions have a general pickling effect on the job; dilute caustic soda solutions, which makes a preferential attack on the flux itself, may be used in each of these cases as an alternative.

FILLER RODS TABLE IV

ROD	COLOUR MARKING	REMARKS	SIZES AVAILABLE
COMWELD Mild Steel	None	This rod gives free running properties and high ductility. Suitable for welding mild steel and wrought iron.	1.6mm, 2.4mm, 3.2mm
COMWELD Super Steel	None	A low alloy steel containing balanced quantities of silicon and manganese. Produces welds of high strength and is suitable for many low alloy steels.	1.6mm, 2.4mm
COMWELD LW1,		Double de-oxidised low carbon filler rod for welding of steel pipes, plates and castings with a tensile strength in the 500 MPa class	1.6mm, 2.4mm
COMWELD LW1-6		Low carbon steel filler rod, tensile strength in the 500MPa class	1.6mm, 2.4mm
COMWELD 316L Stainless Steel	None	Low carbon molybdenum bearing alloy for using 316 and 316L stainless steel.	1.6mm, 2.4mm
COMWELD AL4043	None	Has a lower melting point than aluminium and is suitable for welding most castings and alloy sheets.	1.6mm, 2.4mm, 3.2mm
COMWELD AL5356	None	An aluminium alloy rod suitable for welding 75, 76, 77, 78 alloys.	1.6mm, 2.4mm, 3.2mm
BlueStrike Manganese Bronze		Free flowing manganese bronze for producing high bond strength on cast iron and steel.	1.6mm, 2.4mm, 3.2mm, 5.0mm
BlueStrike Tobin Bronze		A free flowing deoxidised bronze rod recommended for the fusion welding of brass and bronze, the braze welding and the brazing copper.	1.6mm, 2.4mm, 3.2mm, 5.0mm
BlueStrike Manganese Bronze		This rod produces maximum bond strength in braze welds on steel and cast iron and also has excellent hardness and wear resistant properties.	1.6mm, 2.4mm, 3.2mm
COMWELD COMCOAT C	Pale Blue Coating	Flux coated free flowing manganese bronze for producing high bond strength on cast iron and steel.	2.4mm, 3.2mm
COMWELD COMCOAT T	White Coating	Flux coated low fuming bronze alloy suitable for the fusion welding of brass and bronze and braze welding of copper.	2.4mm
COMWELD COMCOAT N	Pink Coating	Flux coated premium quality nickel bronze alloy for the braze welding of steel, iron and cast iron. Also excellent for the fusion welding of copper-zinc alloys of similar composition.	2.4mm, 3.2mm
Silver Brazing Alloy 115	Brown	Low melting point alloy for the brazing of copper and copper alloy. Use with flux on copper alloys. Flow point: 705°C.	2.4mm
Silver Brazing 245	Light Blue	Lowest temperature alloy giving strong joints on all ferrous and non-ferrous metals. Flow point: 620°C.	1.6mm

COMET CONSUMABLES TABLE V

TYPE 41 - OXY/ACETYLENE CUTTING NOZZLES

PLATE THICKNESS (MM)	NOZZLE SIZE	PART NUMBER	CLEANING CUTTING	DRILL SIZE PREHEAT	PRESSURE OXYGEN KPA	PRESSURE ACETYLENE KPA	CUTTING SPEED (MM/MIN)	CONSUMPTION OXYGEN (L/ MIN)	CONSUMPTION ACETYLENE (L/ MIN)
6	8	306047	8	5x6	200	100	450	20	3.5
12	12	306048	12	6x7	200	100	380	4	38
20	12	306048	12	6x7	250	100	340	4.5	42
25	15	306049	15	6x8	220	100	320	56	6
40	15	306049	15	6x8	350	100	270	75	7
50	15	306049	15	6x8	400	100	240	7.5	85
75	15	306049	15	6x8	450	100	180	8	95
100	20	306050	20	6x10	400	100	150	134	9
125	20	306050	20	6x10	450	100	150	10	215
150	24	306051	24	6x11	500	100	130	12.5	232

TYPE 44 - OXY/LPG CUTTING NOZZLES

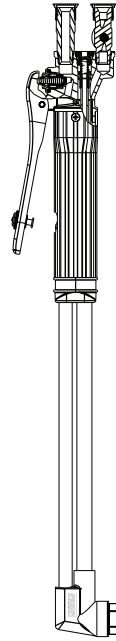
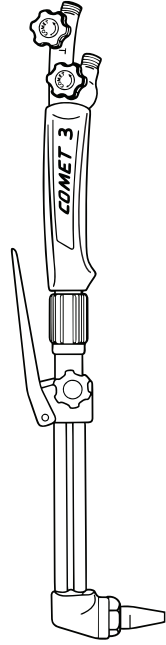
PLATE THICKNESS (MM)	NOZZLE SIZE	PART NUMBER	CLEANING DRILL SIZE CUTTING	PRESSURE OXYGEN KPA	PRESSURE LPG KPA	CUTTING SPEED (MM/MIN)	CONSUMPTION OXYGEN (L/MIN)	CONSUMPTION LPG (L/MIN)
6	8	306026	8	200	100	450	3.5	30
12	12	306028	12	200	100	380	50	4
20	12	306028	12	250	100	340	4.5	58
25	15	306029	15	220	100	320	5.5	73
40	15	306029	15	350	100	270	5.5	90
50	15	306029	15	400	100	240	5.5	99
75	15	306029	15	450	100	180	6	111
100	20	306030	20	100	400	160	149	6
125	20	306030	20	450	100	160	6.5	171
150	24	306031	24	500	100	160	9	256

TYPE 551 - OXY/ACETYLENE WELDING TIPS

PART NUMBER	TIP SIZE	STEEL THICKNESS (MM)	PRESSURE KPA OXYGEN	PRESSURE KPA ACETYLENE	CONSUMPTION EACH GAS I/MIN
307056	4	0.9	50	50	1.5
307057	6	1.2	50	50	1.5
307000	8	2	50	50	2.0
307001	10	2.6	50	50	3.0
307002	12	3.2 – 4.0	50	50	4.0
307003	15	5.0 – 6.5	50	50	6.5
307004	20	8.2 – 10.0	50	50	12.0
307005	26	13 – 19	50	50	22
307006	32	25	50	100	38.0

TYPE 554 - OXY/LPG BRAZING TIPS

PART NUMBER	TIP SIZE	STEEL THICKNESS (MM)	PRESSURE KPA OXYGEN	PRESSURE KPA ACETYLENE
307068	8	2	50	50
307059	15	5.0 – 6.5	50	50

MULTI-PURPOSE CUTTING TORCH**COMET BLOWPIPE HANDLE FITTED
WITH COMET CUTTING ATTACHMENT**

SECTION 5: NOZZLE CLEANING INFORMATION

Do not mistreat the nozzle. Do not use it as a hammer or as a lever to prise away cut portions of metal. To clear the orifices, use the nozzle cleaning reamers supplied with this kit. It is strongly recommended that these be used in preference to other means. When cleaning a nozzle, the following process should be observed:

- Select the correct size cleaning reamers for the nozzle/orifice to be cleaned
- Secure the nozzle firmly with the cutting end facing upward
- Insert the cleaner into the orifice to be cleaned
- Work the reamer gently in an “up and down” motion until the orifice has cleared

It is most important that the small holes at the seating end of the nozzles are not enlarged in any way. Effective pre-heat flame shape and cutting oxygen stream can only be maintained when the edges of the orifice are sharp and square. If a nozzle becomes damaged on the end, rub it down with a piece of fine emery paper over a plate of glass, holding the nozzle at right angles to the glass.

Do not use old pieces of wire, reamers or brooches to clean out pre-heat and cutting stream orifices. Do not interfere in any way with the seating surfaces either on the nozzles or in the blowpipe head.



TIP CLEANERS

P/N: 308036

SECTION 6: SERVICE AND REPAIR

Apparatus improperly maintained or repaired can be dangerous. Improper service or repair, service or modification of the product could result in damage to the product and/or injury to the operator. **Under no circumstances, should you attempt to service or repair the product.** Service and repairs are to be carried out by trained personnel only, so as to ensure that the product is returned to you in a safe working order. Please consult your local CIGWELD PTY LTD distributor for information on approved repair agents.



AN ESAB BRAND

LIMITED WARRANTY TERMS

LIMITED WARRANTY: CIGWELD Pty Ltd, An ESAB Brand, hereafter, "CIGWELD" warrants to customers of its authorized distributors hereafter "Purchaser" that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the CIGWELD products as stated below, CIGWELD shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with CIGWELD's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at CIGWELD's sole option, of any components or parts of the product determined by CIGWELD to be defective.

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LIMITATION OF LIABILITY: CIGWELD SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, SUCH AS, BUT NOT LIMITED TO, LOST PROFITS AND BUSINESS INTERRUPTION. The remedies of the Purchaser set forth herein are exclusive and the liability of CIGWELD with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by CIGWELD whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of CIGWELD is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN CIGWELD'S SOLE JUDGEMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY CIGWELD PRODUCT. PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS. The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date CIGWELD delivered the product to the authorized distributor.

Any claim under this warranty must be made within the warranty period which commences on the date of purchase of the product. To make a claim under the warranty, take the product (with proof of purchase from a CIGWELD Accredited Seller) to the store where you purchased the product or contact CIGWELD Customer Care 1300 654 674 for advice on your nearest Service Provider. CIGWELD reserves the right to request documented evidence of date of purchase. CIGWELD or our Accredited Distributor must be notified in writing of its claim within seven (7) days of becoming aware of the basis thereof, and at its own expense returning the goods which are the subject of the claim to CIGWELD or nominated Accredited Distributor/Accredited Service Provider

This warranty is given.

CIGWELD Pty Ltd

A.B.N. 56007226815

71 Gower Street, Preston Victoria, Australia, 3072

Phone: 1300 654 674

Email: support@cigweld.com.au

Website: www.cigweld.com.au

This warranty is provided in addition to other rights and remedies you have under law: Our goods come with guarantees which cannot be excluded under the Australian Consumer Law. You are entitled to replacement or refund for a major failure and to compensation for other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Warranty	Warranty Period
Hand held welding, cutting and heating blowpipe	12 Months
Blowpipe mixer and cutting attachment and multipurpose torch	12 Months
Gas regulators (excluding seat assembly and pressure gauges)	5 Years
Gas regulator seat assemblies and pressure gauges	6 Months
Elastomer seals and "O" rings used in the equipment	3 Months
Accessories, defined as items used to ignite, maintain or repair, including hoses and fittings, cutting nozzles, welding and heating tips	1 Month





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