



*Creative Oxygen*

# Cylinder Gases, Welding & Cutting Solutions

**Product Catalogue**

[airliquide.ca](http://airliquide.ca)





# Revealing our **NEW** Logo!



«Creative Oxygen» promises positive transformation through endless resourcefulness.

## It means:

- + Oxygen is at the core of our business. **AIR LIQUIDE WAS BUILT ON OXYGEN**, it is a vital resource for industry and health.
- + **OXYGEN IS THE EMBODIMENT OF 'IDEAS'**. It is essential for generating new ideas. As we go beyond oxygen as a molecule, it becomes a source of inspiration to create new developments for our existing markets, and for future business, such as hydrogen energy.

World leader in gases, technologies and services for Industry and Health, **AIR LIQUIDE IS PRESENT IN 80 COUNTRIES** with close to 50,000 employees and serves more than 2 million customers and patients. Oxygen, nitrogen and hydrogen have been at the core of the company's activities since its creation in 1902. Air Liquide's ambition is to be the leader in its industry, delivering long-term performance and acting responsibly.

Air Liquide ideas create value over the long term. At the core of the company's development are the commitment and constant inventiveness of its people.

Air Liquide anticipates the challenges of its markets, invests locally and globally and **DELIVERS HIGH-QUALITY SOLUTIONS**.

The company relies on competitiveness in its operations, targeted **INVESTMENTS IN GROWING MARKETS AND INNOVATION** to deliver profitable growth over the long-term.

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# CYLINDER GASES



Gas Supply Modes

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Safely Transport your Cylinders

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Cylinder Size Chart

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**ALTOP**, **SMARTOP** and **MINITOP** - Safety Reinvented

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*NOTE: The pressure in the cylinders is intended for general information purposes only and is not intended as a representation or warranty of any kind, or as a statement of any terms or conditions of sale.*



## Gas supply modes



AIR LIQUIDE, ONE OF THE WORLD'S LEADING PRODUCERS OF INDUSTRIAL GASES, OFFERS ITS CUSTOMERS A FULL RANGE OF GAS SUPPLY MODES TO MEET THEIR REQUIREMENTS.

## CYLINDERS

- + Basic gas container, holding from 1 to 15 m<sup>3</sup> capacity (approximately)
- + Available in small portable cylinders equipped with tulip caps for portability and safety
- + Available in XPR™ (extra high pressure) cylinders – for higher volume, reducing number of cylinder changes
- + Exclusive and unique cylinders with Altop or Minitop, integrated regulator/valve for oxygen, acetylene, argon and argon mixtures cylinders
- + New standard valve Smartop, residual pressure valve with ON/OFF lever for simplicity for argon, argon mixtures oxygen, acetylene and helium balloon cylinders

## MANIFOLD

- + Serves larger gas consumption needs
- + Reduces cylinder handling
- + Workstations supplied by pipeline from a manifold
- + Available with either manual or automatic switch-over system

## Gas supply modes



### IN STORES OR AT A DEPOT

- + More than 70 stores and 700 depots, where you can pickup cylinders, in Canada based in strategic area
- Meet our experts and get instant tips and expertise
- Shop our full range of products and solutions
- Get your product when needed

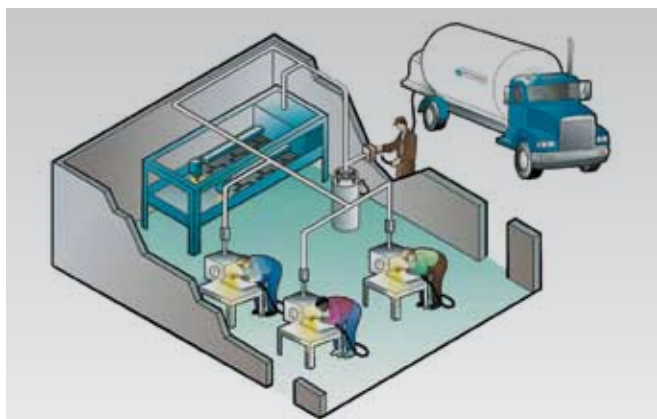
To find a store visit [m.airliquide.ca](http://m.airliquide.ca)



### BULK PAK

- + For pure and mixed gases
- + 16 cylinders framed by a steel cage
- + Efficient for gas consumptions of 240 to 500 m<sup>3</sup> / month
- + Single-valve outlet allowing connection with customer's main pipeline
- + No gas loss due to vaporization

For more information on bulk paks, contact your Air Liquide representative



### MICRO BULK

- + For large volume requirements
- + Suits gas consumptions of 500 to 1000 m<sup>3</sup> / month
- + Small liquid tank on-site at customer's facility, filled from small tanker trucks
- + Gas distributed to workstation sites via pipelines
- + Gas flow should be steady to avoid vapor loss



### BULK SUPPLY

- + Ideal for very large gas volume requirements
- + Recommended for gas consumptions greater than 1000 m<sup>3</sup> / month
- + Liquid tank on-site at customer's facility, filled from tanker trucks
- + Enables continuous supply of gas on a large industrial scale
- + Gas flow must be heavy and continuous

# SAFELY HANDLE YOUR CYLINDERS

## Safety first

TAKE NECESSARY PRECAUTIONS WHEN HANDLING CYLINDERS TO WORK SAFELY AND AVOID ACCIDENTS.



### USE A CART TO MOVE CYLINDERS

Put the cylinder onto a transportation cart and make sure it's fixed with a chain. The use of a cart makes the transport faster, easier and safer (see section Carts page A-26)

\* Magnetic cart illustrated



### LARGE CYLINDERS ARE HEAVY



### PROTECT YOURSELF!





# SAFELY TRANSPORT YOUR CYLINDERS

CYLINDER GASES CAN BE DANGEROUS IF NOT TRANSPORTED ADEQUATELY. FOLLOW THE SAFETY GUIDELINES TO AVOID ACCIDENTS.



**AIR LIQUIDE RECOMMENDS THAT YOU DO NOT TRANSPORT YOUR CYLINDERS IN A NON VENTILATED TRUNK OR SPACE OF A VEHICLE.**



- + Close the cylinder valves
- + Disconnect the equipment
- + Ensure cylinders are tightly secured
- + Keep your vehicle well ventilated
- + Do not leave cylinders inside the vehicle for prolonged periods



## BEWARE OF SHOCKS

Even when slanted inside a trunk, a cylinder can become a dangerous projectile in case of a frontal shock or a rollover



- + A cylinder is never totally empty. A few litres of acetylene can cause the trunk of a vehicle to explode
- + A leak is more likely to occur from the pressure regulator, pipes or blowpipe



**DO NOT LEAVE THE CYLINDERS INSIDE THE VEHICLE FOR A LONG PERIOD OF TIME**

**SECURE THE CYLINDERS IN A UPRIGHT POSITION**



**DISMANTLE ALL EQUIPMENT DURING TRANSPORTATION**



**CLOSE ALL FAUCETS, EVEN IF THE CYLINDER IS EMPTY**



**AIR OUT THE VEHICLE**

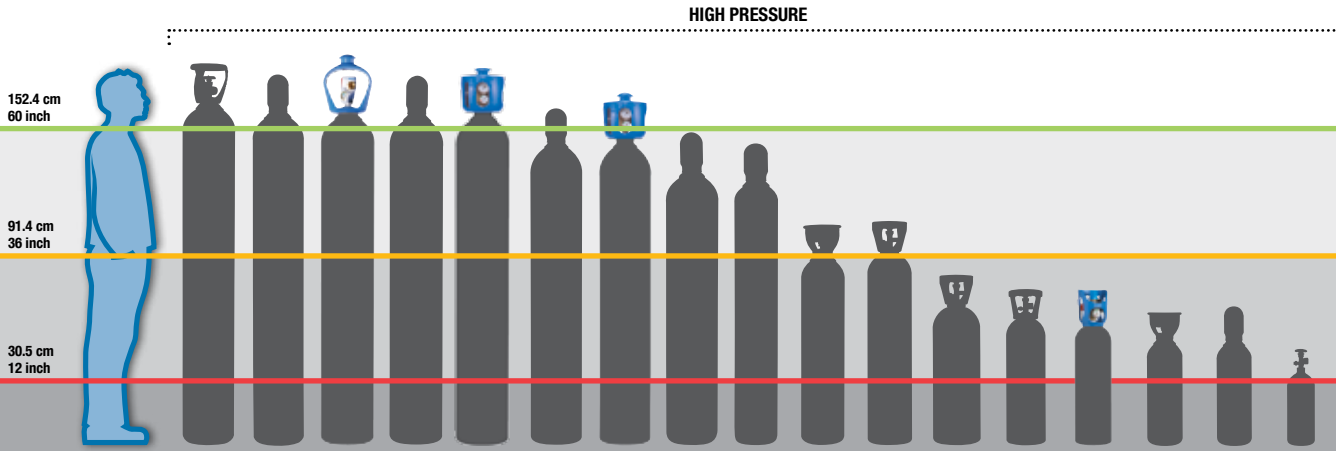
**DANGER**

**DEPENDING ON THE NATURE AND QUANTITY OF THE PRODUCTS, THE TRANSPORTATION MAY BE SUBJECTED TO THE TRANSPORT OF DANGEROUS GOODS REGULATION IN TERMS OF:**

- + Display of Dangerous Goods Safety Marks (i.e. Placards)
- + Shipping documentation
- + Circulation on roads designated for dangerous goods
- + Training on the regulation and the products transported

# CYLINDER SIZE CHART

You're sure to find what you need with Air Liquide! We offer a wide range of cylinder sizes for a complete gas offer. The following pages list our gases and the sizes in which they are available.



SIZE <sup>1</sup>	50 XPR	52	50 SMARTOP	50	50 ALTOP	44	44 ALTOP	37	22	16	16AL	14AL	11AL	ALBEE	9 TULIP	9	4
HEIGHT MM IN	1495 58.9	1461 57.5	1410 55.5	1410 55.5	1410 55.5	1295 51	1295 51	1143 45	1066 42	787 31	835 32.9	591.6 23.3	596.9 23.5	737 29	464 18.3	464 18.3	355 14
DIAMETRE MM IN	229 9	238.8 9.4	235.7 9.28	235.7 9.28	235.7 9.28	235.7 9.28	235.7 9.28	235.7 9.28	178 7	178 7	184.15 7.25	203.20 8	184.15 7.25	178 7	172 6.73	172 6.73	133 5.23
TARE WEIGHT KG LB	67 147.7	65.3 144	60.8 134	60.8 134	60.8 134	52.2 115	52.2 115	47.2 104	29 64	22.2 49	13.9 30.7	11.4 25.1	10.2 22.6	14 31	10 22	10 22	4.3 9.5
WATER CAPACITY L IN <sup>3</sup>	50 3051.2	52.1 3181	49.1 2995	49.1 2995	49.1 2995	43.3 2640	43.3 2640	37.2 2270	21.7 1320	15.4 942	15.7 960	13.4 816	10.7 650	11 672	7.87 480	7.87 480	3.6 220

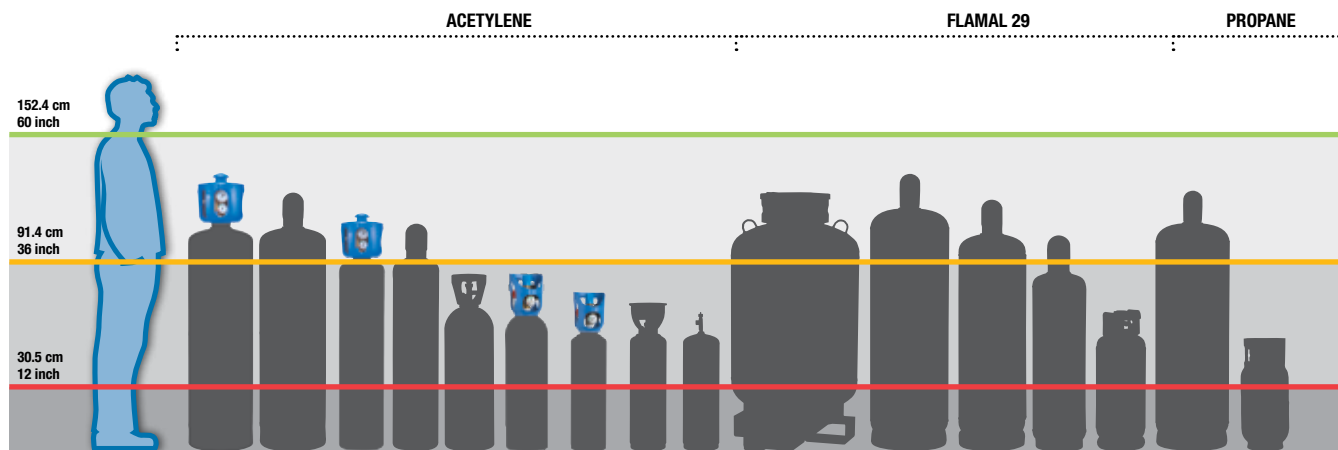
5' 10" Man shown for cylinder proportion

<sup>1</sup> Cylinder size number refers to water capacity in litres.

NOTE: For the volumes and pressures in the following pages, please note that metric values (kPa and m<sup>3</sup>) are calculated at 15°C (59°F), while imperial values (psig and scf) are calculated at 21°C (70°F).

## DID YOU KNOW?

Air Liquide worldwide uses a standard way of recognizing cylinders. The size of the cylinder represents the number of litres of water that it contains. For example, a size 16 cylinder would fit 16 litres of water, a size 50 would contain 50 litres of water, etc.



SIZE <sup>1</sup>	69 ALTOP	69	23 ALTOP	23	14	ALBEE	8 MINI- TOP	8 TULIP	8	2	450	108	65	28	13	100	33
<b>HEIGHT</b>																	
<b>MM</b>	1041.4	1041.4	870	870	647.7	813	502.9	502.9	502.9	340.4	1445.3	1150.9	1095.4	766.7	462	1196.9	718.8
<b>IN</b>	41	41	34.3	34.3	25.5	32	19.8	19.8	19.8	13.4	56.9	45.3	43.1	30.2	18.2	47.12	28.3
<b>DIAMETRE</b>																	
<b>MM</b>	304.8	304.8	203.2	203.2	177.8	178	152.4	152.4	152.4	97.3	762	368.3	304.8	228.6	226.1	377.8	312.4
<b>IN</b>	12	12	8	8	7	7	6	6	6	3.8	30	14.5	12	9	8.9	14.87	12.3
<b>TARE WEIGHT</b>																	
<b>KG</b>	98.9	98.9	41.2	41.2	23.4	23	12.9	12.9	12.9	4	157	32.7	26.3	12.24	6.35	31.75	10.9
<b>LB</b>	218	218	90.9	90.9	51.6	51	28.5	28.5	28.5	8.8	346.1	72	58	27	14	70	24
<b>WATER CAPACITY</b>																	
<b>L</b>	68.4	68.4	25.1	25.1	14	14	7.9	7.9	7.9	2.1	454	108.1	64.95	27.6	11.9	108.1	36.3
<b>IN<sup>3</sup></b>	4171	4171	1530	1530	855	855	480	480	480	128	27704.8	6596.6	3963.5	1682.4	726.2	6596.6	2217.35

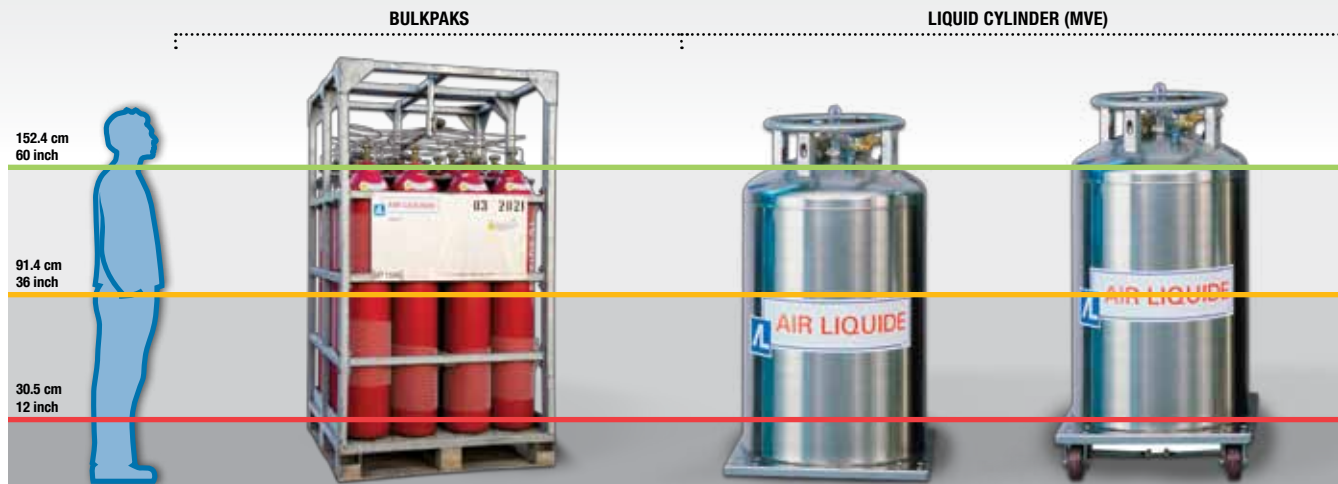
5' 10" Man shown for cylinder proportion

<sup>1</sup> Cylinder size number refers to water capacity in litres.

NOTE: For the volumes and pressures in the following pages, please note that metric values (kPa and m³) are calculated at 15°C (59°F), while imperial values (psig and scf) are calculated at 21°C (70°F).



# CYLINDER SIZE CHART



SIZE <sup>1</sup>	16 X 44	16 X 50	16 X 50 XPR	160 L	180 L	240 L	450 L
<b>HEIGHT</b>							
<b>MM</b>	1879.6	1879.6	1879.6	1513.8	1612.9	1343.7	1574.8
<b>IN</b>	74	74	74	59.6	63.5	52.9	62
<b>DIAMETRE</b>							
<b>MM</b>	1054.1 (wide) x 1016 (deep)	1054.1 (wide) x 1016 (deep)	1054.1 (wide) x 1016 (deep)	508	508	660.4	762
<b>IN</b>	41.5x40	41.5x40	41.5x40	20	20	26	30
<b>TARE WEIGHT</b>							Approximate weight cylinder + frame
<b>KG</b>	1125.5	1263.1	1362.3	113.4	117.9	136.1	568
<b>LB</b>	2480	2784	3003.2	250	260	300	1250
<b>WATER CAPACITY</b>							
<b>L</b>	692.8	785.6	800	165	185	230	428
<b>IN<sup>3</sup></b>	42240	47920	48819.2	10068.9	11289.4	14035.5	26118.2

5' 10" Man shown for cylinder proportion

<sup>1</sup> Cylinder size number refers to water capacity in litres.

NOTE: For the volumes and pressures in the following pages, please note that metric values (kPa and m³) are calculated at 15°C (59°F), while imperial values (psig and scf) are calculated at 21°C (70°F).

## ALTOP, SMARTOP and MINITOP - Safety reinvented

# ALTOP SAFETY, SIMPLICITY, SAVINGS

**SINCE 1995 IN EUROPE / 1998 IN CANADA, ALTOP HAS BEEN HELPING INCREASE SAFETY IN INDUSTRIAL WORKING ENVIRONMENT**

Non-removable, rugged composite top protecting the fully-integrated valve and regulating device

Check-valve on the outlet prevents backflow of gas when connecting cylinders

Gas supply at your fingertips; fast shut-off with ON/OFF lever

Regulator valve operation checked with each refill

Handle and round knob for safe and easy handling

Pressure gauge shows cylinder pressure at all times

- + Hot and cold pressure scale on the acetylene gauge
- + Easy-to-set operating pressures
- + These cylinders meet department of Transport Canada requirements
- + Check the content at a glance



**Altop is the unique, fully-integrated valve and regulator with an ON/OFF lever that revolutionizes the use of compressed gas. It was created to provide superior safety, ease-of-use and cost efficiency in the most innovative way.**

- + Gas cylinders ready-to-use any time, any place - all you need are your torch and hoses
- + The right regulator for the job on each cylinder - always operational and ready to supply
- + Simple ON/OFF lever



## SMARTOP

AIR LIQUIDE NEW STANDARD VALVE - SAFETY, SIMPLICITY, SAVINGS

- + Easy ON/OFF lever
- + Shock-absorbing cap (stays in place at all time)
- + Built-in flow moderator
- + Easy to handle
- + Check the content at a glance
- + SMARTOP also includes a RPV-NRV: residual pressure valve / non-return valve
- + Gas savings
- + Time savings
- + These cylinders meet department of Transport Canada requirements

**A regulator must be connected to the SMARTOP™ valve (standard CGA connection) before lifting the lever on**



## MINITOP

THE READY-TO-USE PORTABLE CYLINDER

- 1. Ergonomic handle**  
Easier to handle
- 2. ON/OFF lever**  
You can always see if it's ON. Very easy to open and close
- 3. Integrated regulator fully protected at all times**  
Greater safety for the user. Tested and inspected by Air Liquide at each fill
- 4. Easy to set**  
With the graduated knob, you can set and read the operating pressure very easily
- 5. Easy connection**  
Comes with a standard B-size connection
- 6. Pressure gauge**  
Whether the lever is positioned at ON or OFF, you can see the level of gas in the cylinder with the glimpse of an eye

**This smaller version of the proven Altop, will give the same benefits as the Altop but in a smaller portable package!**

The **FLAMAL** Advantage

There is no single solution to every challenge faced in today's industrial business world. To get an edge on your competitors you need to optimize your processes. Flamal gases can give you that edge, no matter what flame process you use.

# ACETYLENE $C_2H_2$

CYLINDER COLOR : BLACK OR BLUE

Acetylene is a standard fuel gas used in conjunction with oxygen for welding metals and cutting steel, and for allied oxy-acetylene processes for the heating, forming and treating of metals.

Air-acetylene flames also are, in general, used for brass and aluminum soldering and other plumbing applications where the very high temperature of the oxy-acetylene flame is not required.

The TOP difference: size 23 and 69 is offered in ALTOP.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		M <sup>3</sup>	SCF		
GAS-ACE2EX	2	0.28	10.1	200	1530 kPa (250 psig)
GAS-ACE8TEX <sup>2</sup>	8	1.1	39.67	520	1530 kPa (250 psig)
GAS-ACE8EX	8	1.1	39.67	520	1530 kPa (250 psig)
GAS-ACE8MINITOP	8	1.1	39.67	023	1530 kPa (250 psig)
GAS-ACE14	14	2.08	75.01	410	1530 kPa (250 psig)
GAS-ACE23	23	3.6	129.83	410	1530 kPa (250 psig)
GAS-ACE23ALTOP	23	3.6	129.83	023	1530 kPa (250 psig)
GAS-ACE69	69	10.3	371.46	410	1530 kPa (250 psig)
GAS-ACE69ALTOP	69	10.3	371.46	023	1530 kPa (250 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F  
UN Number : UN1001

<sup>2</sup> Size 8 equipped with tulip cap.  
Hazard Class : 2.1



# OXYGEN $O_2$

CYLINDER COLOR : RED OR BLUE

Oxygen is commonly used in industrial applications in conjunction with acetylene and other fuel gases in processes such as metal cutting, welding, flame hardening, scarfing, cleaning, hard-facing, etc.

The TOP difference: size 44 is offered in ALTOP.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		M <sup>3</sup>	SCF		
GAS-OXY4EX	4	0.57	20.64	540	14 960 kPa (2217 psig)
GAS-OXY9TEX <sup>2</sup>	9	1.39	50.00	540	14 960 kPa (2217 psig)
GAS-OXY9EX	9	1.39	50.00	540	14 960 kPa (2217 psig)
GAS-OXY9MINITOP	9	1.39	50.00	22	14 960 kPa (2217 psig)
GAS-OXY16	16	2.75	99.02	540	16 820 kPa (2492 psig)
GAS-OXY22	22	3.45	124.34	540	14 960 kPa (2217 psig)
GAS-OXY44	44	6.9	248.68	540	14 960 kPa (2217 psig)
GAS-OXY44ALTOP	44	6.9	248.68	22	14 960 kPa (2217 psig)
GAS-OXYBP50	16 x 50	150.04	5411.08	540	17 820 kPa (2640 psig)
GAS-OXY160LC	160 L	124.06	4473.96	Gas - 540 Liquid - 440	1585 kPa (230 psig)
GAS-OXY180LC	180 L	138.83	5006.57	Gas - 540 Liquid - 440	1585 kPa (230 psig)
GAS-OXY240LC	240 L	168.84	6125.06	Gas - 540 Liquid - 440	1585 kPa (230 psig)
GAS-OXY450LC	450 L	360.36	12995.78	Gas - 540 Liquid - 440	1585 kPa (230 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

<sup>2</sup> Size 9 equipped with tulip cap.

UN Number : Gas: UN1072 / Liquid: UN1073 Hazard Class : Gas: 2.2 (5.1) / Liquid: 2.2 (5.1)





The **FLAMAL** Advantage

# FLAMAL 29 $C_3H_6$

CYLINDER COLOR : YELLOW

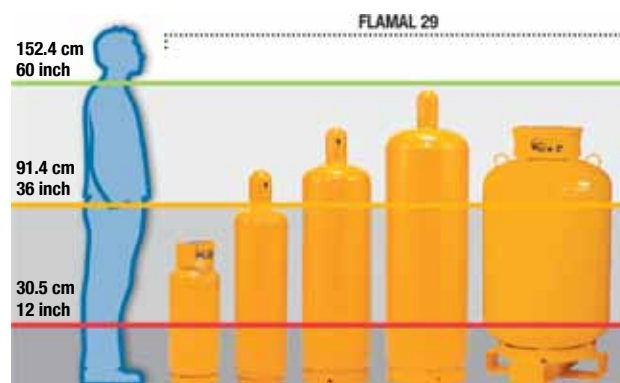
A stable, propylene-based, high energy fuel gas that exhibits the best performance characteristics of acetylene with the safety and convenience features of propane. Flamal 29 has a flame temperature second only to acetylene among the common fuel gases due to its double bond between carbon atoms. When burning, Flamal 29 produces 70% more heat in its primary flame than propane does, and twice the secondary flame heat of acetylene.

This unique balance of heat distribution provides fast starts for cutting and piercing as well as efficient BTU transfer in heating applications, making Flamal 29 the most versatile of fuel gases.

ITEM NUMBER	SIZE	VOLUME		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		KG	LB		
GAS-FLA2913	13	5	11	510	800 kPa (135 psig)
GAS-FLA2928	28	11.3	25	510	800 kPa (135 psig)
GAS-FLA2965	65	26.3	58	510	800 kPa (135 psig)
GAS-FLA29108	108	45.4	100	510	800 kPa (135 psig)
GAS-FLA29450	450	190.5	420	510	800 kPa (135 psig)

UN Number : UN1077

Hazard Class : 2.1



# PROPANE $C_3H_8$

CYLINDER COLOR : WHITE

A liquefied petroleum gas that provides good performance in applications that require overall heat content at an economical cost. Propane does not possess the double and triple bonds found in acetylene and Flamal 29 so does not develop their high flame temperatures or concentrated heat, but its secondary flame produces a high Btu output.

Low pressure welded steel cylinders are used for propane. Most common cylinder capacity: 100 lb\*\*.

Propane is supplied in liquid form under a vapour pressure of 827 kPa (120 psig) at 21°C. Like Flamal 29, withdrawal rate and vapour pressure vary with temperature.

\*\* Check availability at your local store

ITEM NUMBER	SIZE	VOLUME		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		KG	LB		
GAS-PRO3313	33 1/3	14	30.8	—	720 kPa (120 psig)
GAS-PRO100	108	45.4	100	510	720 kPa (120 psig)

UN Number : UN1978

Hazard Class : 2.1



\* Not used for flame applications.  
Commonly used for carburation (forklifts)

## Pure Gases

# ARGON<sub>Ar</sub>

CYLINDER COLOR : DARK GREEN

Argon is an inert gas that is very easy to ionize, has a low thermal conductivity and low heat transfer.

**MAIN INDUSTRIAL APPLICATIONS**

It is often used in shielded arc processes for welding aluminum, stainless steel, bronze and copper in pure form or in combination with predetermined percentages of oxygen, carbon dioxide or helium, depending on the metal being welded. (see Blueshield and Arcal section pages A16-A18).

Argon is also used for inerting in other industries such as wine-making and food applications.

The TOP difference: size 50 is offered in Smartop and Alttop.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE
		M <sup>3</sup>	SCF		@ 15°C (70°F)
GAS-ARG9EX	9	1.38	49.81	580	14 960 kPa (2217 psig)
GAS-ARG16	16	2.75	99.26	580	16 820 kPa (2492 psig)
GAS-ARG22	22	3.43	123.77	580	14 960 kPa (2217 psig)
GAS-ARG50XPR	50 XPR	15.06	543.11	680	30 380 kPa (4500 psig)
GAS-ARGBP50XPR	16 X 50 XPR	240.96	8689.75	680	30 380 kPa (4500 psig)
GAS-ARG160LC	160 L	119.5	4309.61	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-ARG180LC	180 L	133.11	4800.31	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-ARG240LC	240 L	162.68	5867.04	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-ARG450LC	450 L	352.58	12715.48	Gas - 580 Liquid - 295	1585 kPa (230 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

UN Number : Gas: UN1006 / Liquid: UN1951 Hazard Class : Gas: 2.2 / Liquid: 2.2



# CARBON DIOXIDE<sub>CO<sub>2</sub></sub>

CYLINDER COLOR : LIGHT GREY

Carbon Dioxide is a cold inert gas that becomes acidic when dissolved in water and prevents oxidation.

It has a high heat transfer, thermal conductivity and oxidation potential and it is also hard to ionize.

**MAIN INDUSTRIAL APPLICATIONS**

Carbon dioxide has numerous uses in many different industries as in metal fabrication operations, shielding gas in a semi-automatic welding process and fire fighting.

Also, one of its main uses is in the food and beverage industry for processing, packaging, transportation and refrigeration of meat products, frozen foods, dairy products and as an inert atmosphere over perishable packaged products (see Aligal section page A-21).

ITEM NUMBER	SIZE	VOLUME		CGA CONNECTION	TYPICAL CYLINDER PRESSURE
		KG	LB		@ 15°C (70°F)
GAS-CO29EX	9	5.9	13	320	1590 kPa / 830 psig
GAS-CO214	14 AL	9.07	20	320	1590 kPa / 830 psig
GAS-CO237	37	22.68	50	320	1590 kPa / 830 psig
GAS-CO244	44	29.3	64.6	320	1590 kPa / 830 psig
GAS-CO2SYP37	37	22.68	50	320	1590 kPa / 830 psig
GAS-CO2SYP44	44	29.3	64.6	320	1590 kPa / 830 psig
GAS-CO2160LC	160 L	168	370.38	Gas - 320 Liquid - 320	2413 kPa / 350 psig
GAS-CO2180LC	180 L	187	412.26	Gas - 320 Liquid - 320	2413 kPa / 350 psig
GAS-CO2240LC	240 L	240	529.11	Gas - 320 Liquid - 320	2413 kPa / 350 psig

UN Number : Gas: UN2187 / Liquid: UN1013

Hazard Class : Gas: 2.2 / Liquid: 2.2



## Pure Gases

# COMPRESSED AIR

CYLINDER COLOR : DARK GREY

## MAIN INDUSTRIAL APPLICATIONS

Industrial compressed air is typically used to run pneumatic or air tools, inflate tires and clean parts. Breathing grade compressed air is used in applications requiring a portable source of air to breathe.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		M <sup>3</sup>	SCF		
<b>Industrial Grade : GAS-AIR44</b>	44	6.53	325.48	346	14 960 kPa / 2217 psig
<b>Breathing Grade : GAS-AIRBRE9EX GAS-AIRBRE44</b>	9 44	1.31 6.53	47.1 325.48	346	14 960 kPa / 2217 psig

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

UN Number : Gas: UN1002

Hazard Class : Gas: 2.2



# HELIUM (INDUSTRIAL) He

CYLINDER COLOR : BROWN

Helium is an inert (no oxidation), colourless, odourless, tasteless, non-flammable, non-corrosive gas and it is the coldest liquefied gas. It also has a very high heat transfer, high thermal conductivity and it is hard to ionize.

## MAIN INDUSTRIAL APPLICATIONS

Helium is used considerably in the welding industry as an inert shielding gas for arc welding.

It is also used in cryogenic research, leak detection, MRI systems, breathing gases, aerospace industry and in offshore applications.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		M <sup>3</sup>	SCF		
<b>GAS-HEL50</b>	50	8.1	292.07	580	17 820 kPa / 2640 psig
<b>GAS-HELBP50</b>	16 x 50	129.58	4673.04	580	17 820 kPa / 2640 psig

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

UN Number : Gas: UN1046

Hazard Class : Gas: 2.2



## Pure Gases

# HELIUM (BALLOON GRADE) $\text{He}$

CYLINDER COLOR : LIME GREEN

One of the major properties of helium is that it is much lighter than air. Consequently, the entertainment industry frequently uses helium to fill balloons.

The TOP difference: size 50 is offered in Smartop.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)	# BALLOONS FILLED
		M <sup>3</sup>	SCF			
GAS-HELBAL9EX <sup>2</sup>	9	1.21	43.64	580	14 960 kPa (2217 psig)	155
GAS-HELBAL11 <sup>2</sup>	11 AL	1.49	53.63	580	14 960 kPa (2217 psig)	190
GAS-HELBAL16 <sup>2</sup>	16	2.42	87.16	580	16 820 kPa (2492 psig)	310
GAS-HELBAL50SMART <sup>2</sup>	50	8.1	291.76	580	17 820 kPa (2640 psig)	1050

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F14  
UN Number : Gas: UN1046

<sup>2</sup> Based on 25 cm (10") balloons.  
Hazard Class : Gas: 2.2

**SAFETY ALERT:**

Take note that inhaling helium can be deadly; it can cause anoxia. Oxygen is needed to maintain life. If another gas is inhaled, such as helium, it displaces the much-needed oxygen and can cause death.



# HYDROGEN $\text{H}_2$

CYLINDER COLOR : TURQUOISE

Hydrogen is a light, colourless, odourless and tasteless gas with very high heat transfer.

**MAIN INDUSTRIAL APPLICATIONS**

Hydrogen is used as a fuel gas with oxygen where low flame temperature of 5,125°F (2,830°C) is needed. Because it can be safely compressed to overcome underwater pressures, oxy-hydrogen cutting torches are sometimes employed by divers on salvage operations. Also, mixed in small quantities with argon, hydrogen brings significant improvements in weld quality for stainless steels.

It is also used as reducing agent, microchip manufacturing, and hydrogenation and rocket fuels.

Hydrogen, combined with a fuel cell, can be used to produce electricity with water as the only emission.

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		M <sup>3</sup>	SCF		
GAS-HYD44	44	5.41	195.08	350	13 610 kPa (2015 psig)
GAS-HYDBP44	16 x 44	86.56	3121.28	350	13 610 kPa (2015 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

UN Number : Gas: UN1049

Hazard Class : Gas: 2.1



Pure Gases

# NITROGEN $N_2$

CYLINDER COLOR : LIGHT BROWN

Nitrogen is an inert, colourless, odourless and tasteless gas that prevents oxidation and combustion. It is also intensively cold in the liquid form.

MAIN INDUSTRIAL APPLICATIONS

Nitrogen is used in purging applications for the heating/ventilation/plumbing industries. It is also required in large volumes by oil refineries and petrochemical industries for purging and blanketing operations.

Nitrogen is also used as a more environmental friendly option for tire inflation. It reduces the heat and therefore reduces the rolling resistance which translates into fuel economy.

Nitrogen is widely used by the food industry. In its liquid form, it is employed to quick-freeze a wide variety of perishable foods. In its gaseous form, nitrogen is used in storage facilities for fresh produce to delay normal ripening and deterioration. (see Aligal section page A-21)

ITEM NUMBER	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)
		M <sup>3</sup>	SCF		
GAS-NIT9EX	9	1.27	45.64	580	14 960 kPa (2217 psig)
GAS-NIT11	11 AL	1.53	55.32	580	14 960 kPa (2217 psig)
GAS-NIT16	16	2.48	89.54	580	16 820 kPa (2492 psig)
GAS-NIT16AL	16 AL	2.26	81.61	580	14 960 kPa (2217 psig)
GAS-NIT50	50	8.46	305.01	580	17 820 kPa (2640 psig)
GAS-NIT50X	50 X	13.03	469.79	680	30 380 kPa (4500 psig)
GAS-NITBP50X	50 X	208.43	7516.62	680	30 380 kPa (4500 psig)
GAS-NIT160LC	160 L	100.4	3620.87	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-NIT180LC	180 L	112.21	4046.86	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-NIT240LC	240 L	136.68	4929.26	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-NIT450LC	450 L	291.93	10527.92	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-NIT160LCLW	160 L	100.4	3620.87	Gas - 580 Liquid - 295	1585 kPa (230 psig)
GAS-NIT240LCLW	240 L	136.68	4929.26	Gas - 580 Liquid - 295	1585 kPa (230 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

UN Number : Gas - UN1066 / Liquid - UN1977      Hazard Class : Gas: 2.2 / Liquid: 2.2





**BLUESHIELD™ & ARCAL** | Optimized Shielding Gases for Welding Application

# APPLICATION GUIDE

## CHOOSE THE RIGHT SHIELDING GAS FOR YOUR APPLICATION

Regardless of the type of steel you are welding, whether thick or thin, Air Liquide has the optimal shielding gas for your applications.



NAME	COMPONENTS	GMAW (MIG)						GTAW (TIG)						FCAW (FLUX CORED)		MCAW	
		CARBON STEEL		STAINLESS STEEL		ALUMINUM		CARBON STEEL		STAINLESS STEEL		ALUMINUM		CARBON STEEL	STAINLESS STEEL	STEEL	STAINLESS
		Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick				
BLUESHIELD Argon	Ar					X	X	X		X		X					
BLUESHIELD 1	Ar He						X		X		X		X				
BLUESHIELD 2	Ar He						X		X		X		X				
BLUESHIELD 3	Ar He						X		X		X		X				
BLUESHIELD 4	Ar O <sub>2</sub>	X	X	X	X											X	X
BLUESHIELD 6	Ar CO <sub>2</sub>	X	X													X	
BLUESHIELD 7	Ar CO <sub>2</sub>	X	X													X	
BLUESHIELD 8	Ar CO <sub>2</sub>	X	X											X	X	X	
BLUESHIELD 9	He Ar CO <sub>2</sub>			X													
BLUESHIELD 11	Ar H <sub>2</sub>									X (1)	X (1)						
BLUESHIELD 12	Ar H <sub>2</sub>									X (3)	X (1)						
BLUESHIELD 14 <sup>4</sup>	Ar H <sub>2</sub>																
BLUESHIELD 15 <sup>5</sup>	N <sub>2</sub> H <sub>2</sub>																
BLUESHIELD 23	Ar CO <sub>2</sub> O <sub>2</sub>	X	X													X	
ARCAL 14	Ar CO <sub>2</sub> O <sub>2</sub>	X	X	X	X											X	
ARCAL 21	Ar CO <sub>2</sub>	X	X													X	
ARCAL 121	Ar He CO <sub>2</sub>	X (2)		X	X												
ARCAL 211	Ar CO <sub>2</sub> He	X	X											X	X	X	
ALMIG	Ar CO <sub>2</sub> O <sub>2</sub>	X	X													X	
ALTIG	Ar He					X	X	X	X	X	X	X	X				
ALFLUX	Ar CO <sub>2</sub>	X	X											X	X	X	

<sup>(1)</sup> Austenitic only (300 series)

<sup>(2)</sup> Galvanized or coated steels

<sup>(3)</sup> Automatic processes

<sup>(4)</sup> Plasma cutting gas

<sup>(5)</sup> Gas used for back shielding. It can be used for plasma cutting.

# BLUESHIELD SHIELDING GASES

## CYLINDER COLOR : DARK BLUE

Air Liquide offers the complete line of Blueshield welding shielding gas mixtures. These blends became industry standards because of their performance and consistency. The Blueshield shielding gas family covers most of your needs for quality and consistency in the GMAW, FCAW, MCAW and GTAW processes.



## IMPROVE YOUR WELDING APPLICATION WITH BLUESHIELD

NAME	COMPONENTS	SIZE	VOLUME <sup>1</sup>		CGA CONNECTION	APPLICATION	ITEM NUMBER	TYPICAL CYLINDER PRESSURE	
			M <sup>3</sup>	SCF				@ 15°C (70°F)	
BLUESHIELD ARGON	Ar	50 ALTOP	9.32	336.28	032	GMAW and GTAW Aluminum, stainless steel and carbon steel with GTAW only, copper, bronze.	GAS-BLUA50ALTOP	17 820 kPa (2640 psig)	
		50			580		GAS-BLUA50SMART		
BLUESHIELD 1	Ar He	50	8.61	310.59	580	GMAW and GTAW Steel, and stainless steel with GTAW only, aluminum, copper, nickel, magnesium, titanium Short circuit, spray and pulse	GAS-BLU150	16 820 kPa (2492 psig)	
		50 XPR	15.48	558.19	680		GAS-BLU150X	30 380 kPa (4500 psig)	
		16 x 50 XPR	247.36	8920.69			GAS-BLU1BP50X	30 350 kPa (4500 psig)	
BLUESHIELD 2	Ar He	50	8.32	300.02	580	GMAW and GTAW Aluminum, copper, nickel, magnesium, titanium Short circuit and spray and pulse	GAS-BLU250	16 820 kPa (2492 psig)	
BLUESHIELD 3	Ar He	50	8.06	290.66	580	GMAW and GTAW Aluminum, copper, nickel, magnesium, titanium Short circuit and spray	GAS-BLU350	16 820 kPa (2492 psig)	
		16 x 50	128.96	4650.64			GAS-BLU350BP	16 820 kPa (2492 psig)	
BLUESHIELD 4	Ar CO <sub>2</sub>	50	8.84	318.98	580	GMAW and MCAW Carbon, low alloy and stainless steels	GAS-BLU450	16 820 kPa (2492 psig)	
BLUESHIELD 6	Ar CO <sub>2</sub>	50 ALTOP	9.35	337.02	032	GMAW, MCAW Steel Short circuit, spray and pulse	GAS-BLU650ALTOP	16 820 kPa (2492 psig)	
		50 X	15.93	574.59	680		GAS-BLU650X	30 380 kPa (4500 psig)	
		50			580		GASBLU650SMART	16 820 kPa (2492 psig)	
		16 x 50 X	254.92	9193.48	680		GAS-BLU6BP50X	30 350 kPa (4500 psig)	
BLUESHIELD 7	Ar CO <sub>2</sub>	50 ALTOP	9.48	341.72	032	GMAW, MCAW, FCAW Steel Short circuit and spray	GAS-BLU750ALTOP	16 820 kPa (2492 psig)	
		50			580		GAS-BLU750SMART		
		16 x 50	153.92	5435.64			GAS-BLU7BP50		
BLUESHIELD 8	Ar CO <sub>2</sub>	9 COP	1.5	54.07	580	GMAW, MCAW, FCAW Steel, and stainless steel with FCAW Short circuit, and globular	GAS-BLU89COP	14 175 kPa (2100 psig)	
		22	3.74	134.94			GAS-BLU822		
		50	10.28	370.99			GAS-BLU850SMART	16 820 kPa (2492 psig)	
		50 ALTOP		032	GAS-BLU850ALTOP				
		16 x 50	164.59	5935.83	580		GAS-BLU8BP50		
BLUESHIELD 9	He Ar CO <sub>2</sub>	50	7.53	271.59	580	GMAW Stainless steel Short circuit	GAS-BLU950	16 820 kPa (2492 psig)	
BLUESHIELD 11	Ar H <sub>2</sub>	44	6.24	224.86	350	GTAW Stainless steel (300 series only)	GAS-BLU1144	13 500 kPa (2000 psig)	
BLUESHIELD 12	Ar H <sub>2</sub>	44	6.22	224.39	350	GTAW (Automatic) Stainless steel (300 series only), nickel	GAS-BLU1244	13 500 kPa (2000 psig)	
BLUESHIELD 14	Ar H <sub>2</sub>	50	8.16	294.39	350	Plasma arc cutting (PAC) Stainless steel, aluminum and other non-ferrous metals	GAS-BLU1450	16 210 kPa (2400 psig)	
BLUESHIELD 15	N <sub>2</sub> H <sub>2</sub>	44	5.85	211.05	350	GMAW and GTAW, PAC Stainless steel (300 series only) Back purging or trailing gas	GAS-BLU1544	13 500 kPa (2000 psig)	
BLUESHIELD 23	Ar CO <sub>2</sub> O <sub>2</sub>	50	9.11	328.57	580	GMAW and MCAW Steel Short circuit, spray and pulse	GAS-BLU2350	16 820 kPa (2492 psig)	
		50 XPR	15.56	561.14	680		GAS-BLU2350X	30 380 kPa (4500 psig)	
		16 x 50 XPR	248.95	8978.16			GAS-BLU23BP50X		

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

NOTE: All of the above bold applications are preferred choices. Applications other than those mentioned are possible. Contact your Air Liquide representative to discuss your application.



# ARCAL SHIELDING GASES

CYLINDER COLOR : LIGHT BLUE

The Arcal line was created to assure optimized performance such as:

- + Improved productivity and quality
- + Reduced fume emissions and spatter
- + Optimized packaging with more gas in every cylinder (XPR packaging)
- + Increase safety with the tulip cap protecting the valve at all times
- + Better manoeuvrability of the cylinder with the protective cap

## OPTIMIZE YOUR WELDING APPLICATIONS WITH ARCAL

MIXTURE	COMPONENTS	APPLICATION	REPLACE	SIZE	VOLUME <sup>1</sup>		ITEM NUMBER	TYPICAL CYLINDER PRESSURE
					M <sup>3</sup>	SCF		@ 15°C (70°F)
ARCAL 14	Ar CO <sub>2</sub>	<b>GMAW (MIG)</b> welding of carbon steels in all transfer modes, short-circuit, globular, spray, and pulsed-spray transfer. Excellent for jobs requiring painting or coating due to low-silicate formation. <b>GMAW (MIG)</b> welding of stainless steels, especially in spray transfer. <b>MCAW</b> (metal core) welding where low smoke is a concern.	Can replace standard Ar/CO <sub>2</sub> , Ar/O <sub>2</sub> and Ar/CO <sub>2</sub> /O <sub>2</sub> mixtures	50 XPR	15.23	549.28	<b>GAS-ARC1450X</b>	30 380 kPa (4500 psig)
				16 x 50 XPR	243.7	8788.53	<b>GAS-ARC14BP50X</b>	
ARCAL 21	Ar CO <sub>2</sub>	<b>GMAW, MCAW</b> Steel Short circuit, spray and pulse.		50 XPR	16.08	579.83	<b>GAS-ARC2150X</b>	30 380 kPa (4500 psig)
				16 x 50 XPR	257.25	9277.29	<b>GAS-ACR2150BPX</b>	
ARCAL 121	Ar He CO	<b>GMAW (MIG)</b> welding of all stainless steels in all transfer modes, short-circuit, globular, spray, and pulsed-spray transfer. <b>GMAW (MIG)</b> welding of galvanized carbon steels.	Can replace standard Ar/O <sub>2</sub> and Ar/CO <sub>2</sub> /H <sub>2</sub> mixtures	50 XPR	13.96	503.44	<b>GAS-ARC12150X</b>	30 380 kPa (4500 psig)
				16 x 50 XPR	223.36	8055.17	<b>GAS-ACR121BP50X</b>	
ARCAL 211	Ar CO <sub>2</sub> He	<b>FCAW</b> (flux core) welding of carbon steel and stainless steel where lower smoke emissions and increased productivity are desired. <b>MCAW</b> (metal core) welding of carbon steels. <b>GMAW (MIG)</b> welding of carbon steels in all transfer modes.	The ideal "clean" alternative to standard CO <sub>2</sub> and Ar/CO <sub>2</sub> mixtures	50 XPR	15.36	554.04	<b>GAS-ARC21150X</b>	30 380 kPa (4500 psig)
				16 x 50 XPR	245.81	8864.64	<b>GAS-ARC211BP50X</b>	
ALMIG	Ar CO <sub>2</sub> O <sub>2</sub>	<b>GMAW</b> welding of carbon steels and regular carbon level stainless steel and non-critical stainless steel applications. <b>GMAW</b> welding of carbon steels Short-circuit, spray and pulse transfer.	Can replace standard Ar/CO <sub>2</sub> , Ar/O <sub>2</sub> and Ar/CO <sub>2</sub> /O <sub>2</sub> mixtures	16	2.81	101.42	<b>GAS-ALMIG16</b>	16 820 kPa (2492 psig)
ALTIG	Ar He	<b>GTAW</b> welding of all base metals. <b>GMAW</b> welding of non-ferrous metals. Application requiring higher heat inputs or faster travel speeds compared to pure argon.	Can replace argon or other argon/helium mixtures	16	2.61	94.24	<b>GAS-ALTIG16</b>	16 820 kPa (2492 psig)
ALFLUX	Ar CO <sub>2</sub>	<b>FCAW</b> welding of carbon and stainless steels. <b>GMAW/MCAW</b> of carbon steel.		16	3.05	109.99	<b>GAS-ALFLUX16</b>	16 820 kPa (2492 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

NOTE: All 50 XPR cylinders CGA 680. All Almig and Altig cylinders CGA 580.

# LASAL GASES FOR THE LASER INDUSTRY

CYLINDER COLOR : LIGHT BLUE

The quality of the final product that you fabricate results from the degree of quality obtained at each level of the production. We offer cylinders with superior quality as well as a wide range of high performance Lasal gases.

All Lasal gas cylinders are equipped with a check-valve that maintains a positive residual pressure that eliminates any risk of gas contamination. We take extra care during the filling operations of your Lasal gas cylinder. Our production methods have been devised to ensure the uniformity and the stability of the mixtures providing high quality products and reliability.

The gas purity plays a key role for the achievement of optimal performances in laser cutting process.

**+ LASING GASES:** for the resonator to generate the laser beam in the CO<sub>2</sub> laser type

**+ ASSIST GASES:** for the optimization of cutting process



MIXTURE	COMPONENTS	CGA CONNECTION	SIZE	VOLUME <sup>1</sup>		ITEM NUMBER	TYPICAL CYLINDER PRESSURE @ 15°C (70°F)	LASER MANUFACTURERS	LASER SOURCES	SPECIFICATIONS			
				M <sup>3</sup>	SCF					AVAILABLE PURITIES	TRACE O <sub>2</sub>	MOISTURE	TRACE HYDRO-CARBONS
LASAL 1	N <sub>2</sub>	580	52 XPR	9.87	356.1	GAS-LAS152X	20 360 kPa (3000 psig)	Trumpf-Bystronic-Prima- Cincinnati Machine	Trumpf-Bystronic-Prima		<10ppm	<5ppm	<1ppm
LASAL 2	CO <sub>2</sub>	320	52 XPR	34.2	1233.37	GAS-LAS252X	5090 kPa (830 psig)	Trumpf-Bystronic-Prima- Cincinnati Machine	Trumpf-Bystronic-Prima	N45	<10ppm	<20ppm	<20ppm
LASAL 4	He	580	52 XPR	9.5	345.5	GAS-LAS452X	20 360 kPa (3000 psig)	Trumpf-Bystronic-Prima- Cincinnati Machine	Trumpf-Bystronic-Prima	N50	<10ppm	<5ppm	<1ppm
LASAL 4	He	580	16 x 50	129.6	4673.85	GAS-LAS4BP50	20 360 kPa (3000 psig)		Trumpf-Bystronic-Prima	N50	<10ppm	<5ppm	<1ppm
LASAL 39	N <sub>2</sub> O <sub>2</sub>	580	52 XPR	10.25	369.7	GAS-LAS3952X	20 360 kPa (3000 psig)	Various	Rofin Sinar		<10ppm	<5ppm	<1ppm
LASAL 41	He N <sub>2</sub> CO <sub>2</sub>	580	52 XPR	9.01	324.18	GAS-LAS4152X		Bystronic	Bystronic		<10ppm	<5ppm	<1ppm
LASAL P51	He N <sub>2</sub> CO <sub>2</sub>	580	52 XPR	8.21	296.13	GAS-LASP5152X	17 820 kPa (2640 psig)	Mazak	Panasonic		<10ppm	<5ppm	<1ppm
LASAL 53	He N <sub>2</sub> CO <sub>2</sub>	580	52 XPR	9.06	326.74	GAS-LAS5352X	20 360 kPa (3000 psig)	Amada -LVD-Mazak	Fanuc		<10ppm	<5ppm	<1ppm
LASAL 66	He N <sub>2</sub> CO <sub>2</sub>	580	52 XPR	8.39	302.43	GAS-LAS6652X		Amada -LVD-Mazak	Fanuc		<10ppm	<5ppm	<1ppm
LASAL 83	He N <sub>2</sub> CO <sub>2</sub>	580	52 XPR	8.47	395.52	GAS-LAS8352X	17 820 kPa (2460 psig)	Amada -LVD-Mazak	Fanuc		<10ppm	<5ppm	<1ppm
LASAL 105	He N <sub>2</sub> CO <sub>2</sub> CO	580	50	6.98	251.72	GAS-LAS10550	13 600 kPa (2015 psig)	Amada Mitsubishi	Mitsubishi		<10ppm	<5ppm	<1ppm
LASAL 155	He N <sub>2</sub> CO <sub>2</sub> CO H <sub>2</sub>	350	50	6.73	242.71	GAS-LAS15550	13 600 kPa (2015 psig)	Altec 2	Altec 2		<10ppm	<5ppm	<1ppm
LASAL 201	He N <sub>2</sub> CO <sub>2</sub> CO O <sub>2</sub> Xe	350	10	1.5	54.1	GAS-LAS20110	14 960 kPa (2217 psig)	Manufacturers who use Rofin Sinar sources	Rofin Sinar Slab Laser		<10ppm	<5ppm	<1ppm
LASAL 2001	N <sub>2</sub>	680	16 x 50 XPR	208.43	7516.62	GAS-LAS2001BP50X	14 960 kPa (2217 psig)			N48	<10ppm	<10ppm	

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F



# LASAL OFFER

## LASAL SOLUTION

- + Air Liquide has a complete LASAL solution dedicated to high power industrial laser users
- + LASAL is a worldwide standard that is compliant with laser manufacturers' specifications
- + Our products and equipment benefit of more than 25 years of experience



Expertise



Products

- + Lasing Gases
- + Process Gases



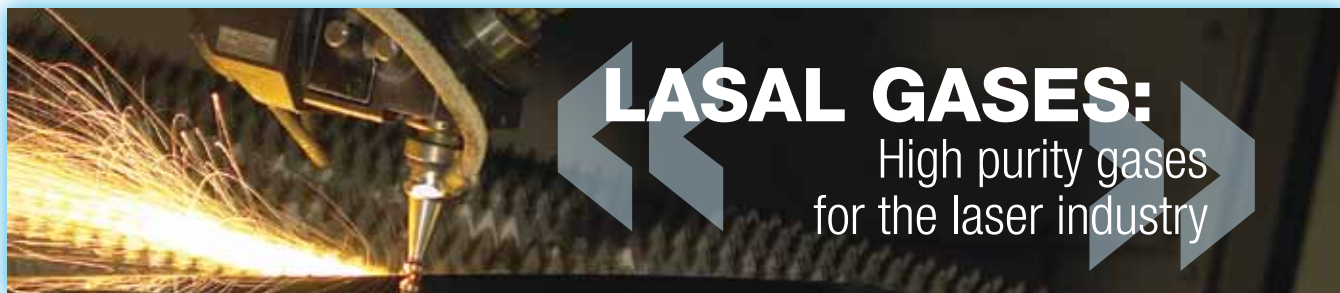
Equipment



# LASAL



Services



### SAFETY ALERT:

REMEMBER THESE DANGERS RELATED TO THE SAFE OPERATION OF LASER CUTTING MACHINES:

- + High speed movements: always observe the general laser machine safety operation, make sure personnel is well trained and wear adequate protective equipment
- + Laser beam: it is non-visible and highly dangerous even if it is not focused; wounds can vary from serious burns to eye destruction. Always wear the proper protective equipment
- + Be aware that some certain LASAL mixtures contain CO and are subject to specific rules for use, storage and transportation.

# ALIGAL GASES FOR THE FOOD INDUSTRY

CYLINDER COLOR : MAROON

The Aligal family of gases is specifically designed for the food industry. The cylinders are dedicated for use in the food and beverage industries only. Special cylinder filling procedures are followed in order to ensure that the strict quality standards of the food industry are met. Aligal is your top-of-mind gas solution from food-packaging to beer dispensing.



## ALIGAL GASES AND FOOD APPLICATION

As soon as it comes into contact with air, food can suffer from physical, enzymatic, microbiological, and biochemical deterioration. Modified Atmosphere Packaging (MAP) is a process for packaging foodstuff together with a gas or a gas mixture containing protective and reactive properties.

Aligal protective atmospheres preserve the natural color and flavor of fresh food. They extend shelf life without chemical additives or preservatives by eliminating or reducing the physical, enzymatic and microbial deterioration that spoils food.

### NITROGEN (N<sub>2</sub>)

- + Low solubility in food
- + No effect on food taste or smell.
- + Displaces oxygen (O<sub>2</sub>)
- + Reduces or delays oxidative reactions
- + Inhibits growth of aerobic micro-organisms
- + Used as a "filler" gas and prevents package collapse

### CARBON DIOXIDE (CO<sub>2</sub>)

- + High solubility in water and fat (food) to form carbonic acid.
- + May give an acidic taste to some foods at elevated (>50%) concentration.
- + Retards the growth of micro-organisms such as moulds and aerobic bacteria.
- + Requires >20% to be significantly effective.
- + May cause the package to collapse for some products.

### OXYGEN (O<sub>2</sub>)

- + Low solubility in food
- + Generally a cause of spoilage.
- + Required in specific cases such as for fresh produce and red meat.
- + Allows respiration of fresh produce.
- + Gives a blooming red colour to meats

MIXTURE	COMPONENTS	APPLICATION	CGA CONNECTION	SIZE	VOLUME <sup>1</sup>		ITEM NUMBER	TYPICAL CYLINDER PRESSURE
					M <sup>3</sup>	SCF		@ 15°C (70°F)
ALIGAL 1	N <sub>2</sub>	Wine applications / tap, Nuts, Chips, Lettuce, Salads, Coffee	580	11AL	55.32		GAS-ALG11	14 960 kPa (2217 psig)
				44	6.32	227.91	GAS-ALG144	
			580 (295)	160L	100.4	3620.87	GAS-ALG1160LC	
				180L	112.21	4046.86	GAS-ALG1180LC	
				240L	136.68	4929.26	GAS-ALG1240LC	
ALIGAL 2	CO <sub>2</sub>	Water and soft drink carbonation, Poultry, Cheese, Bakery	320	14AL	9.09 kg	20.00 lb	GAS-ALG214	5090 kPa (830 psig)
				37	22.68 kg	50.00 lb	GAS-ALG237	
			320 (320)	160L	168 kg	370.37 lb	GAS-ALG2160LC	
				180L	187 kg	412.26 lb	GAS-ALG2180LC	
				240L	240 kg	529.11 lb	GAS-ALG2240LC	
ALIGAL 3	CO <sub>2</sub>	Oxidization for wine, beer, water or used with ALIGAL2 for red meat	540	44	6.9	248.68	GAS-ALG344	14 960 kPa (2217 psig)
			540 (440)	160L	124.06	4473.96	GAS-ALG3160LC	
				180L	138.83	5006.57	GAS-ALG3180LC	
				240L	169.84	6125.06	GAS-ALG3240LC	
ALIGAL 5	N <sub>2</sub> O	Whipped Toppings	326	22	14.60 kg	32.20 lb	GAS-ALG522	4650 kPa (745 psig)
				44	29.30 kg	64.50 lb	GAS-ALG544	
ALIGAL 12	CO <sub>2</sub> N <sub>2</sub>	Stout beer on tap	580	11AL	1.6 kg	59.30 lb	GAS-ALG1211AL	14 175 kPa (2100 psig)
				44	6.74 kg	242.99 lb	GAS-ALG1244	
ALIGAL 13	CO <sub>2</sub> N <sub>2</sub>	Ale beer on tap, Prepared meals, pizza, pasta, grated cheese, vegetables, deli	580	44	7.16	258.08	GAS-ALG1344	14 175 kPa (2100 psig)
ALIGAL 15	CO <sub>2</sub> N <sub>2</sub>	Lager beer on tap, Prepared meals, pizza, pasta, pastries, cooked meats	580	44	8.59	309.64	GAS-ALG1544	14 175 kPa (2100 psig)
ALIGAL 28	CO <sub>2</sub> O <sub>2</sub>	Red meats: beef, lamb, veal, sausages, shish-kebab	296	44	7.33	264.17	GAS-ALG2844	14 175 kPa (2100 psig)

<sup>1</sup> m<sup>3</sup> @ 15°C; scf @ 70°F

At Air Liquide, you get technical assistance from experts in food atmospheres who can give you advice on the best atmosphere, system, means of delivery and equipment for your production situation.

## ALIGAL GASES-BEVERAGE APPLICATION

A longtime partner in the food and beverage industry, Air Liquide has developed specific ALIGAL single and mixed gases for draft beer and wine tapping systems as well as for carbonation and dispensing of soft drinks.

### EXPERT TIPS

Tap into faster and more profitable beer sales. With ALIGAL precision mixtures, you get:

- + The perfect glass/pitcher of beer. ALIGAL 12, 13 or 15 contains just enough CO<sub>2</sub> to maintain the proper carbonation of beer.
- + Less foam, more speed, more profits. ALIGAL does not dissolve in your beer, so you can draw faster without excess foam.
- + Longer lasting head. ALIGAL ensures that the head on your beer does not disappear before it reaches the customer's table.
- + Too much carbonation can give beer an acidic taste. With ALIGAL, your beer always tastes smooth. ALIGAL also eliminates flat beer, airborne bacteria and odors associated with air compressors.

### CO<sub>2</sub>/N<sub>2</sub> IN DRAFT BEER

- + A mixture of these two gases is used in the drafting of beer in kegs.
- + The appropriate level of Carbon Dioxide (CO<sub>2</sub>) in beer conserves its flavor and freshness.
- + The CO<sub>2</sub> in the mixture is also responsible for the carbonation.
- + The Nitrogen (N<sub>2</sub>) is the balance, used only to pump the beer up the tap.
- + Different ALIGAL draft beer products with various CO<sub>2</sub>/N<sub>2</sub> balances are available according to the beverage specifications (Ale, Lager or Stout).



# CGA CYLINDER CONNECTIONS

## ACETYLENE SIZE 2



*Comes with fittings*

### CGA 200

0.625-20NGO-RH-EXT

(Conical Nipple)

## ACETYLENE



*Comes with fittings*

### CGA 410

0.850-14NGO-LH-EXT

(Round Nipple)

## OXYGEN



### CGA 540

0.903-14NGO-RH-EXT

(Large Round Nipple)

## CARBON DIOXIDE



*Comes with fittings*

### CGA 320

0.825-14NGO-RH-EXT\_VALIDER\_1

(Flat Nipple and Washer)

## FLAMAL 29 AND PROPANE



### CGA 510

0.885-14NGO-LH-INT

(Bullet Nipple)

## ARGON, HELIUM, NITROGEN AND MIXTURES



### CGA 580

0.965-14NGO-RH-INT

(Bullet Nipple)

## COMPRESSED AIR



### CGA 346

0.825-14NGO-RH-EXT\_VALIDER\_2

(Round Nipple)

## ACETYLENE SIZE 8



### CGA 520

0.895-18NGO-RH-EXT

(Conical Nipple)

## ARGON, MIXTURES AND ALL XPR CYLINDERS



### CGA 680

1.045-14NGO-RH-INT

## HYDROGEN AND BLUESHIELD 11, 12, 14, 15



### CGA 350

0.825-14NGO-LH-EXT

(Round Nipple)



# CARTS

## CYLINDER CARTS



ITEM NUMBER	NAME	CYLINDER SIZE		CHARACTERISTICS	HEIGHT		WIDHT MM	WIDHT IN	WEIGHT	
		OXYGEN	ACETYLENE		MM	IN			KG	LB
<b>MET-RV8</b>	"B" TANK CART	—	2	"B" tank cylinder cart	610	24	152	6	1.8	4
<b>ALC-DUOMINI</b>	OXY-FUEL MINI DUO	4	2	Oxy-acetylene cylinders in portable plastic carrying case, comes with complete outfit (see gas apparatus section for more info)	597	23.5	330	13	0.9	2
<b>MET-RVDOUJR</b>	OXY-FUEL JUNIOR DUO	9	8	Easy transportation with special locking device keeping cylinders in place at top and bottom. For cylinders with tulip caps	991	39	489	19.25	5.9	13
<b>MET-RVDOU</b>	OXY-FUEL DUO	16	14	Transport cylinders safely and easily with this cart keeping cylinders locked firmly in their place. For cylinders equipped with tulip caps. Special support position in the back of cart when it is in horizontal position. Lockable toolbox. Hooks on cart for oxy-acetylene hoses	1143	45	635	25	16.8	37
<b>MET-RVMINITOP</b>	MINITOP DUO	9	8	Cart for Minitop cylinders. Special features: retractable handle, safety belt	1118	44	483	19	9.1	20
<b>MET-RVALTOP</b>	ALTOP DUO	44	23	Cart for Altop cylinders. Special features: elevation for acetylene cylinders, safety belt, lockable toolbox and 3rd wheel for better stability on B1 model	1143	45	584	23	16.8	37
<b>MET-RVALTOPB1</b>	ALTOP DUO	44	23	Cart for Altop cylinders. Special features: elevation for acetylene cylinders, safety belt, lockable toolbox and 3rd wheel for better stability on B1 model	1143	45	584	23	16.8	37

Note: We recommend the combination of oxy-acetylene duos with the corresponding Blueshield welding and cutting outfits (contact your Air Liquide representative).

# CARTS

## CYLINDER CARTS

Compressed gas cylinders can be hazardous. Precautions must be observed when storing, handling and moving compressed gas cylinders.

When moving a cylinder, all the valves should be closed, the regulator removed and the valve cap installed unless using Altop or Minitop cylinders.



Air Liquide offers strong and compact carts with excellent balance and maneuverability. All models feature a cylinder hold-down chain and some are equipped with a toolbox.

The **MET-RVJUMBOSECURPLUS** model handles large cylinders and is ideal for construction jobs or large shops. Designed with high-floor clearance to move easily over rough surfaces or cluttered areas, it is equipped with an extra-large tool box and a cylinder hold-down chain.

ITEM NUMBER*	WHEEL DIAMETER AND TYPE	CYLINDER SIZE	HEIGHT		WIDHT MM	WIDHT IN	WEIGHT	
			MM	IN			KG	LB
<b>MET-RV4422R</b>	254 mm (10") Semi-pneumatic wheels	Oxy 44 and Ace 23	914	36	635	25	12.7	28
<b>MET-RV4422BR</b>	254 mm (10") Semi-pneumatic wheels	Oxy 44 and Ace 23	978	38.5	445	17.5	11.8	26
<b>MET-RV6944R</b>	355 mm (14") Semi-pneumatic wheels	Oxy 44 and Ace 69	1041	41	768	30.25	18.6	41
<b>MET-RV98/MET-RV98C **</b>	152 mm (6") Semi-pneumatic wheels	Oxy 9 and Ace 8	991	39	489	19.25	5	11
<b>MET-RV44MRB2</b>	254 mm (10") Semi-pneumatic wheels with 3" back wheel and brake. Better safety: cart designed for better stability	Nitrogen 50 or 50 XPR	1118	44	432	17	11.8	26
<b>MET-RVJUMBOSECURPLUS</b>	533 mm (21"), Pneumatic wheels with hub	Oxy 44 and Ace 69	1143	45	1016	40	68	150

\* Other models are available on request

\*\* With toolbox

## Magnetic Cylinder Carts

THE MAGNETIC CYLINDER CART IS AN INNOVATION  
EXCLUSIVE TO AIR LIQUIDE



### Applications

- + Large metal fabrication shops
- + Hospitals
- + Cylinder transportation (N2 for tires)
- + Hospitality Services

### FEATURES

- Lightweight aluminum construction
- Equipped with powerful magnets
- Single cylinder cart
- Boxed dimensions for shipping: 635 x 457 x 1372 mm (25" x 18" x 54") Weight: 28 kg (62 lb)
- Double cylinder cart
- Boxed dimensions for shipping: 635 x 635 x 1372 mm (25" x 25" x 54") Weight: 44 kg (97 lb)

### BENEFITS

- Greatly reduced handling time
- No chains needed to secure cylinders
- Helps reduce possible injuries when moving or handling gas cylinders
- Reduced likelihood of damage to the cylinder shut-off valves
- Maximum convenience and control to transport your cylinders

THE MAGNETIC CYLINDER CART ALLOWS CYLINDERS  
TO BE MOVED QUICKLY, EASILY AND SAFELY



# CYLINDER WALL BRACKETS

AIR LIQUIDE'S WALL-MOUNT CYLINDER BRACKETS ARE DESIGNED TO HOLD GAS CYLINDER SAFELY IN PLACE

- + Contour structure enables cylinders to firmly fit along the support edge
- + Recessed screw holes on the bracket sides allow easy wall mounting
- + Sturdy chain or nylon strap is easily adjustable
- + Suitable for cylinders up to 381 mm (15") diameter



ITEM NUMBER	DESCRIPTION
MET-RV19	Cylinder Wall Bracket, for one Size 9 max., with Nylon Strap
MET-RV19C	Cylinder Wall Bracket, for one Size 9 max., with Chain
MET-RV115	Cylinder Wall Bracket, for one 15" max., with Nylon Strap
MET-RV115C	Cylinder Wall Bracket, for two Size 15 max., with Chain
MET-RV29	Cylinder Wall Bracket, for two Size 9 max., with Nylon Strap
MET-RV29C	Cylinder Wall Bracket, for two Size 9 max., with Chain

# REPLACEMENT WHEELS

THESE REPLACEMENT WHEELS ARE FOAM FILLED SO CART TIRES NEVER FLATTEN AND ALWAYS ROLL SMOOTHLY

ITEM NUMBER	DESCRIPTION
MET-RV15F	254 mm (10") foam cylinder cart wheels
MET-RV16F	406 mm (16") foam cylinder cart wheels





## Cylinder Cages

AIR LIQUIDE OFFERTS SECURE CYLINDER CAGES FOR INDUSTRIAL GASES AND PROPANE. THESE TOUGH CAGES PROVIDE STORAGE FOR GAS CYLINDER WHILE PROTECTING THEM FROM DAMAGE, THEFT AND UNAUTHORIZED ACCESS.

1. Lockable gas cylinder cage
2. Expanded metal sides provide required ventilation
3. Heavy-duty construction
  - Fully welded and shipped assembled
  - Ready-to-ship standard sizes
  - Custom sizes available: gas cylinder cages can be made to your specifications

**MET-RV326C**

6 cylinders fit in cage  
3' x 2' floor size



### INDUSTRIAL CYLINDER CAGES

ITEM NUMBER	DESCRIPTION	CAGE HEIGHT
<b>MET-RV212C</b>	Cage, Industrial Cylinder, 2 Cyl, 2' x 1' x 6'	1.83 m (6')
<b>MET-RV224C</b>	Cage, Industrial Cylinder, 4 Cyl, 2' x 2' x 6'	1.83 m (6')
<b>MET-RV326C</b>	Cage, Industrial Cylinder, 6 Cyl, 3' x 2' x 6'	1.83 m (6')
<b>MET-RV4416C</b>	Cage, Industrial Cylinder, 16 Cyl, 4' x 4' x 6'	1.83 m (6')
<b>MET-RV339C</b>	Cage, Industrial Cylinder, 9 Cyl, 3' x 3' x 6'	1.83 m (6')
<b>MET-RV4312</b>	Cage, Industrial Cylinder, 24 Cyl, 6' x 4' x 6'	1.83 m (6')
<b>MET-RV6424C</b>	Cage, Industrial Cylinder, 24 Cyl, 6' x 4' x 6'	1.98 m (78") front, 1.83 m (72") back
<b>MET-RV8432C</b>	Cage, Industrial Cylinder, 32 Cyl, 8' x 4' x 6'	1.98 m (78") front, 1.83 m (72") back
<b>MET-RV8648C</b>	Cage, Industrial Cylinder, 48 Cyl, 8' x 6' x 6'	1.98 m (78") front, 1.83 m (72") back
<b>MET-RV12672C</b>	Cage, Industrial Cylinder, 72 Cyl, 12' x 6' x 6'	1.98 m (78") front, 1.83 m (72") back

\* Item number meaning: **MET-RV21X**

Number of cylinders that fit in cage  
Floor size, 2' x 1' in this case

### PROPANE CYLINDER CAGES

ITEM NUMBER *	DESCRIPTION
<b>MET-2C2001</b>	Cage, Propane 9.1 kg (20 lb) Cylinder, 2 Cyl
<b>MET-RV4C2002</b>	Cage, Propane 9.1 kg (20 lb) Cylinder, 4 Cyl, 2 Storey-High
<b>MET-24C2003</b>	Cage, Propane 9.1 kg (20 lb) Cylinder, 24 Cyl
<b>MET-RV4C33</b>	Cage, Propane 15 kg (33 lb) Cylinder, 4 Cyl
<b>MET-RV6C33</b>	Cage, Propane 15 kg (33 lb) Cylinder, 6 Cyl
<b>MET-RV8C33</b>	Cage, Propane 15 kg (33 lb) Cylinder, 8 Cyl
<b>MET-RV12C33</b>	Cage, Propane 15 kg (33 lb) Cylinder, 12 Cyl
<b>MET-RV16C33</b>	Cage, Propane 15 kg (33 lb) Cylinder, 16 Cyl
<b>MET-RV24C33</b>	Cage, Propane 15 kg (33 lb) Cylinder, 24 Cyl

\* Item number meaning: **MET-2C2001**

Cylinder size  
Number of cylinders that fit in cage



**Safety Panel for Cylinder Cages**  
Can be ordered on request.



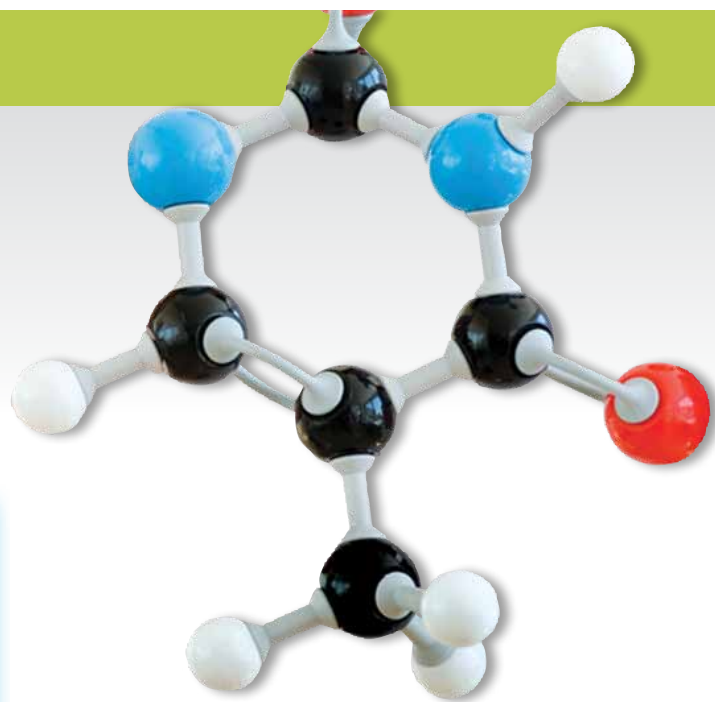
# SPECIALTY GASES



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# MOLECULES THAT MATTER!

As the world's leading supplier of specialty and industrial gases, Air Liquide is all about **"molecules that matter"**. Serving over 100,000 customers in many market segments dealing with a very wide range of applications within the Canadian marketplace is our business.



## Our technologies

Our technologies are carefully engineered to provide customers with meticulously analyzed measures of molecules in the form of pure or mixed gases and liquids.

## Our focus

Our focus however, goes beyond the refining and selling of molecules. It includes providing value that can be measured at the bottom line. Air Liquide products and services help our many customers keep pace with a challenging global economy – by empowering them to improve efficiencies without sacrificing end product quality or analytical accuracy.

## Our commitment

Our commitment to safety, technology and innovation has kept Air Liquide at the forefront of our industry for more than 100 years.

# SCOTT SPECIALTY GASES

Air Liquide is proud and privileged to have Scott Specialty Gases as part of our team since 2007. With over 50 years of experience developing leading-edge technologies Scott Specialty Gases has earned a worldwide reputation for being the Top Dog in high-performance specialty gas mixtures.

The addition of Scott Specialty Gases to the Air Liquide Group reinforces our culture of innovation, safety and quality. Our combined resources enable us to offer you many new **specialty gas solutions** to help you increase your efficiency without sacrificing product quality or accuracy.



With our complete product offer from our ALPHAGAZ™ pure gases and SCOTT™ mixed gases, combined with our specialty gas equipment and technical expertise, Air Liquide has the capabilities to meet all your specialty gas needs.

## CAN'T FIND WHAT YOU NEED?

This catalogue contains only a small representation of Air Liquide Canada's Specialty Gas products and services that are commonly in demand. It does not reflect our total capabilities.

Thus, if you don't see what you need, if you are developing a new application that requires a new pure or mixed gas with unique characteristics, or if you aren't sure if one of our existing catalogue products is what you need, contact *your Air Liquide representative*.

A COMPLETE SPECIALTY GAS CATALOGUE CAN BE FOUND ONLINE AT: **SPECIALTYGASES.CA**

# SPECIALTY GASES CAPABILITIES AT A GLANCE

## Gases

Our gas and liquid mixtures are widely regarded as being the most accurate in the industry and our ALPHAGAZ™ pure gases have long been the global benchmark of quality. Our mixture can be supplied with various levels of certification, from batch analysis to individual cylinder certification and is complete, consistent and complementary to customer needs, whether typical or research unique. Air Liquide can also provide a simplified cylinder offer with its ALPHAGAZ™ pure gas line with guaranteed purity and traceability leading to optimal performance of analytical instruments. We also offer other exclusive brands of gas products for specialized industry applications such as semiconductor, food and beverage, pharmaceuticals, welding, auto emissions testing, laser cutting and many more.

Lecture bottles

High-pressure cylinders (small & large)

16 or 64-pack high pressure cylinders  
(bulk packs / quads)

Low-pressure cylinders (small & large)

Aluminium cylinders (1AL - 30AL)

Tube trailers

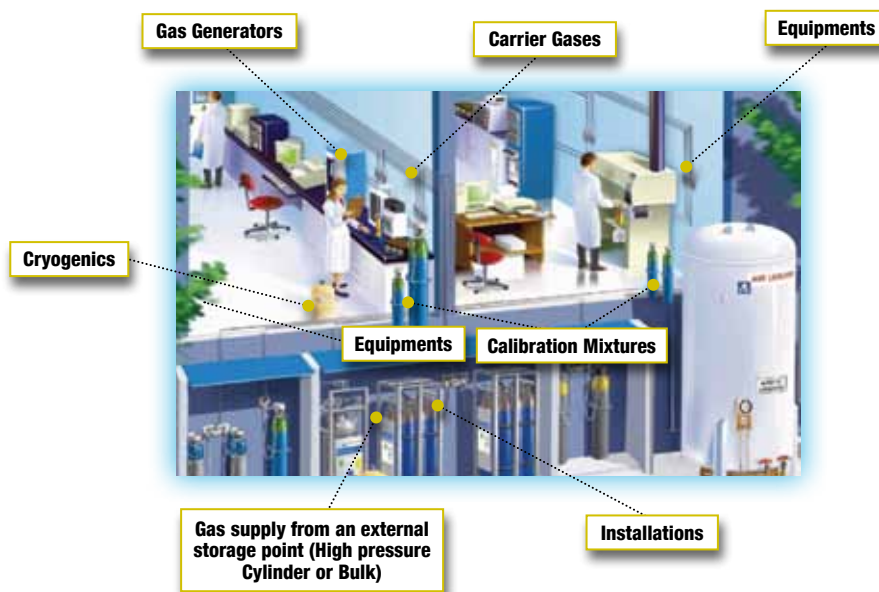
VGLs

## Equipment & Services

In addition to supplying the gases themselves, Air Liquide also offers related products and services to help our customers further improve their process control and achieve greater success in their respective marketplaces. Our high-performance gas handling equipment provides years of trouble-free service, protects gas purity and integrity, and safely delivers it to your point-of-use.

## Logistics & Capabilities

Air Liquide operates numerous state-of-the-art specialty gas production facilities that are strategically located throughout North America to provide our customers with dependable, fast delivery – in most cases by our dedicated fleet or trucks. In addition, all of our specialty gas facilities are ISO 9001:2008 certified and certain laboratories are ISO /IEC 17025 accredited.



## Packaging Alternatives

Air Liquide delivers products in a wide range of sizes, from lecture bottles and nonreturnable, SCOTTY™ transportable cylinders to single and multi high-pressure cylinder packs, to tube trailers and cryogenic liquid containers. Depending on your needs, we have packaging sizes that provide a cost-effective quantity for any application. In addition, we offer exclusive innovations in specialty gas packaging, including our ergonomic cap, and SMARTOP™ valves that promote safety and improve ease-of-use. Due to safety issues and chemical characteristics, not all products are available in all forms of packaging.

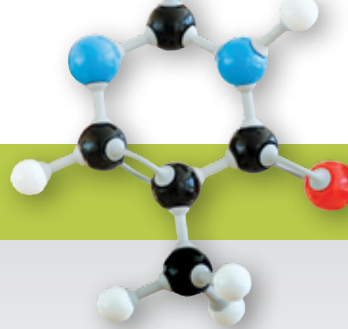
## Technical Expertise

We maintain a staff of scientific and technical team members who can answer technical questions and recommend Air Liquide products that will cost-effectively meet or exceed your application requirements. They can also help develop custom products that meet unique application needs.

## Dedicated Sales And Customer Service Staff

We maintain a dedicated staff of localized, knowledgeable sales, business development and customer service team members who can answer questions, help you with problems and demonstrate to you how Air Liquide products and services can add measurable value to your bottom line.





## Specialty Gases - 10 Most Common Sectors of Activity



### AUTOMOTIVE

#### **AUTOMOTIVE, AIRCRAFT, HEAVY MOTORIZED EQUIPMENT & ENGINE MANUFACTURERS**

- + Laboratory + Product line emission control
- + Final assembly emission control
- + Stack emission control



### BIOCHEMISTRY

- + Research Laboratory



### FOOD

- + Quality control



### ENVIRONMENT

#### **WATER TREATMENT PLANTS**

- + Quality control + Monitoring

#### **AIR POLLUTION CONTROL & MONITORING**

- + To calibrate instruments in laboratories + Remote and mobile test stations + Remote and mobile monitoring stations



### INDUSTRIAL EMISSION

- + Air pollution monitoring + Process control
- + Pilot plant operations



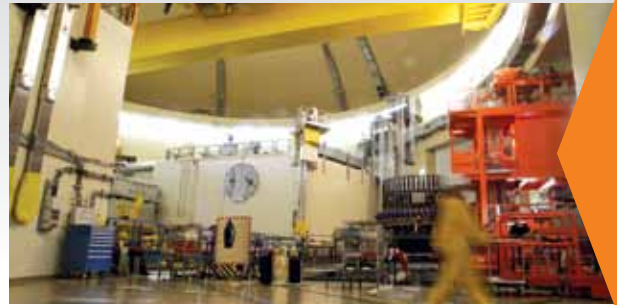
Specialty Gases - 10 Most Common Sectors of Activity



## NUCLEAR

### NUCLEAR POWER PLANTS & NUCLEAR RESEARCH

+ Instruments for measuring  
radioactivity and ionization



## PHARMACEUTICAL

### PHARMACEUTICAL INDUSTRY

+ Research + Consumed in production  
+ Sterilization



## PETROCHEMICAL

### PETROLEUM REFINERIES

+ Research + Quality control + Air pollution + Process  
control + Pilot plant operations + Batch process  
+ Regeneration of catalysts

### CHEMICAL MANUFACTURERS

+ Research + Quality control + Process control



## RESEARCH & DEVELOPMENT

### ANALYTICAL LABS

+ Instrument Calibration + Research  
+ Sample Analysis



## UNIVERSITIES

### POST SECONDARY EDUCATIONAL INSTITUTIONS

+ Research





SMARTOP™

**EXCLUSIVE SMARTOP™**

SIMPLER, SAFER AND MORE RELIABLE

A specially designed ergonomic cap and valve that eases and simplifies cylinder operation.

**Open design**

Open design facilitates access to the valve.

**Easy opening and closing**

On/off lever enables quick shut-off of the gas and identification of cylinders left open unintentionally, enabling improved management of gas consumption and prevents expensive losses and leaks.

**Easy connection of pressure regulator**

Allows connection of standard pressure regulator.

**Residual Pressure Valve**

Equipped with a Residual Pressure Valve and Non-Return Valve that prevents contamination due to atmospheric backflow.



Valve lever locks safely in closed position.

**Constant indication of the cylinder volume**

Built-in pressure gauge to immediately see available volume to better manage and reduce cylinder inventory.

**Optimale safety**

Secured opening at high pressure thanks to built-in flow limitation.

**AIR LIQUIDE INNOVATIVE  
PRODUCT TRIED AND TESTED  
IN ANALYTICAL LABORATORIES**

AIR LIQUIDE INSPECTS AND  
VERIFIES PROPER FUNCTION  
OF THE SMARTOP AT EVERY  
CYLINDER REFILL.

ALPHAGAZ™ Pure Gases

SPECIALTY  
GASES

# ALPHAGAZ™ PURE GASES

INNOVATIVE TECHNOLOGY THAT CHANGES THE USE OF PURE GASES IN THE LABORATORY



Choosing the right gas products for a particular analytical instrument and application can be confusing. Air Liquide has simplified gas selection by reducing the complex and confusing matrix of available gas grades down to two levels of purity as represented in our ALPHAGAZ product line. Instead of focusing on the total purity of the gas, we set limits on the critical impurities that affect the performance of the instrument and application used.



## THREE GRADES, TWO PURITY RANGES

An Air Liquide research and development team surveyed major analytical instrument manufacturers to determine the recommended gas purity for their instrumentation. Studies were then conducted on many of these instruments to determine the effect of varying levels of impurities on their performance. Our findings indicated that two basic ranges for gas purity are necessary to ensure optimal performance of analytical instruments in most applications.

### ALPHAGAZ 1: ONE CONVENIENT GRADE FOR MANY APPLICATIONS

ALPHAGAZ 1 products exceed purity recommendations of most laboratory instrument manufacturers with their 99.99% purity grade. Making them an obvious choice for all-around use in the laboratory. They are designed for analysis from percentage to ppm and provide guaranteed low impurity levels. ALPHAGAZ 1 pures are ideal for most analytic and process control applications, including petrochemical, secondary electronics and optoelectronics as well as scientific research and many other applications.

### ALPHAGAZ 2: THE HIGHEST PURITY LEVEL POSSIBLE

ALPHAGAZ 2 products, designed for analyses from ppm to ppb, exhibit the absolute lowest impurity levels available in the industry with their 99.9995% - 99.9998% purity grade. Making them the best choice for laboratory, analytic and process control applications where uncompromised ultra-high purity is needed.

### ALPHAGAZ 1000: CRYOGENIC SOLUTIONS

ALPHAGAZ 1000 products include argon, nitrogen and helium in cryogenic liquid form. They feature the same purity specifications of 99.999% as ALPHAGAZ 1 and are useful when large volumes of gas are needed. Such as, nitrogen or argon used with ICP and FTIR instruments, or helium for cooling magnets in instruments such as NMR spectrometers.

## BENEFITS AND FEATURES

Guaranteed low impurity levels protect instrument sensitivity ensuring peak performance

Residual Pressure Valve (RPV) integrated to prevent atmospheric contamination

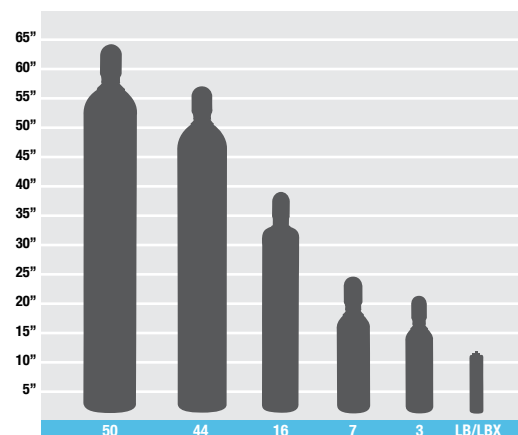
Cylinder-to-cylinder consistency provides added performance reliability

Cylinders come with blue plastic plug to guarantee product inviolability

Product analysis is performed on each individual batch for purity guarantee and a Certificate of Conformity is provided

Helps reduce cylinder inventory by eliminating need for supplemental pure gases

Exclusively designed ergonomic cap and SMARTOP™ valve available with certain products









VGLs of 100L, 240L & 250L available for ALPHAGAZ 1000 (size dependent on product)

## ALPHAGAZ™ Pure Gases

SPECIALTY  
GASESALPHAGAZ™  
SPECIFICATION

Most pure gas applications require specific impurity levels. Working with our research and development team, we made it easy for our customers to select appropriate pure gas grades.

PRODUCT	GRADE	PRODUCT USE		PRODUCT SPECIFICATIONS								
		COMMON ANALYSERS	GAS FUNCTION	PURITY %	CO <sub>2</sub> PPM	CO PPM	H <sub>2</sub> PPM	H <sub>2</sub> O PPM	N <sub>2</sub> PPM	O <sub>2</sub> PPM	THC PPM	
 <b>AIR</b>	ALPHAGAZ 1	GC-FID Total FID NDIR / FTIR	Flame Flame Optic System Purge	N/A				<3		20-22 %		
	ALPHAGAZ 2			N/A	<0.1	<1		<0.5		20-21 %	<0.1	
 <b>ARGON</b>	ALPHAGAZ 1	UV Fluo Spark Spectro	Purge Plasma	99.999 %				<3		<2	<0.5	
	ALPHAGAZ 2	UV Fluo Spark Spectro	Purge Plasma	99.9995 %	<0.5	<0.1	<0.1	<0.5		<0.5	<0.1	
	ALPHAGAZ 1000			99.999 %				<3		<2	<0.5	
 <b>HELIUM <sup>(1)</sup></b>	ALPHAGAZ 1	GC-FID / GC-TCD / GC-MS	Carrier	99.999 %				<3		<2	<0.5	
	ALPHAGAZ 2	GC-FID / GC-ECD / GC-MS	Carrier	99.9998 %	<0.5	<0.1		<1		<0.5	<0.1	
	ALPHAGAZ 1000	NMR / MRI	Supraconduction	99.999 %				<3		<2	<0.5	
 <b>HYDROGEN</b>	ALPHAGAZ 1	GC-FID / Total FID	Flame	99.999 %				<3		<2	<0.5	
	ALPHAGAZ 2			99.9998 %	<0.5	<0.1		<0.5	<1	<0.5	<0.1	
 <b>NITROGEN <sup>(2)</sup></b>	ALPHAGAZ 1	NDIR / FTIR / Spark Spectro UV Fluo	Optic System Purge Purge	99.999 %				<3		<2	<0.5	
	ALPHAGAZ 2	GC-ECD UV Fluo	Carrier Purge	99.9998 %	<0.5	<0.1	<0.1	<0.5			<0.1	
	ALPHAGAZ 1000			99.999 %				<3		<2	<0.5	
 <b>OXYGEN</b>	ALPHAGAZ 1			99.999 %				<3			<0.5	
	ALPHAGAZ 2			99.9995 %	<0.5	<1	<0.1	<0.5	<3		<0.1	

<sup>1</sup> Excluding neon / <sup>2</sup> Excluding argon

## ALPHAGAZ™ Pure Gases

SPECIALTY  
GASES

PRODUCT SPECIFICATIONS							RECOMMENDED REGULATOR			
	ITEM NUMBER <sup>(3)</sup>		CONTENTS		PRESSURE		TWO STAGE REGULATOR	PAGE	SINGLE-STAGE REGULATOR	PAGE
		SIZE	CF	M <sup>3</sup>	PSIG	BAR				
	SPG-AIR1AL50SMART	50	309	8.75	2 640	182	SCOTT Model 211 CONCOA 412 Series	B-14 B-15	SCOTT Model 205 CONCOA 302 Series	B-14 B-15
	SPG-AIR2AL50	50	283	8	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15	SCOTT Model 3300 CONCOA 402 Series	B-14 B-15
	SPG-ARG1AL50	50	329	9.33	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15	SCOTT Model 2900** CONCOA 493 Series	* *
	SPG-ARG1ALBP50	50 x 16	5 272	149.28	2 640	182				
	SPG-ARG1AL17	17	90	2.55	2 000	138				
	SPG-ARG1AL7	7	36	1.03	2 000	138				
	SPG-ARG2AL50	50	330	9.33	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-ARG2AL50SMART	50	330	9.33	2 640	182				
	SPG-ARG2AL44	44	244	6.9	2 265	156				
	SPG-ARG1AL240LC	240	5 739	162.5	230	16			SCOTT Model 205 CONCOA 302 Series	B-14 B-15
	SPG-HEL1AL50SMART	50	286	8.1	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15	SCOTT Model 2900** CONCOA 493 Series	* *
	SPG-HEL1AL30AL	30	148	4.2	2 000	138				
	SPG-HEL1AL17	17	79	2.24	2 000	138				
	SPG-HEL1AL11AL	11	48	1.36	2 000	138				
	SPG-HEL1AL7	7	32	0.9	2 000	138				
	SPG-HEL2AL50	50	283	8	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-HEL2AL44	44	212	6	2 265	156				
	SPG-HEL1AL250LC	250	6 658	188.5	N/A	N/A	Application Dependant - Please Inquire	-		
	SPG-HEL1AL100LC	100	2 663	75.4	N/A	N/A				
	SPG-HYD1AL44	44	191	5.41	2 000	138	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-HYD1ALBP44	44 x 16	3 057	86.56	2 000	138				
	SPG-HYD1ALBP50	50 x 16	4 255	120.48	2 400	166				
	SPG-HYD2AL44	44	191	5.4	2 265	156	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-NIT1AL50	50	298	8.45	2 640	182	SCOTT Model 211 CONCOA 412 Series	B-14 B-15	SCOTT Model 2900** CONCOA 493 Series	* *
	SPG-NIT1AL50SMART	50	298	8.45	2 640	182				
	SPG-NIT1AL17	17	84	2.39	2 000	138				
	SPG-NIT1AL7	7	34	0.96	2 000	138				
	SPG-NIT2AL50	50	298	8.45	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-NIT2AL44	44	223	6.32	2 265	156				
	SPG-NIT1AL240LC	240	4 838	137	230	16			SCOTT Model 205 CONCOA 302 Series	B-14 B-15
	SPG-OXY1AL50	50	328	9.3	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-OXY1AL50SMART	50	328	9.3	2 640	182				
	SPG-OXY1AL44	44	244	6.9	2 217	153				
	SPG-OXY1AL17	17	94	2.65	2 000	138				
	SPG-OXY2AL50	50	328	9.3	2 640	182	SCOTT Model 318 CONCOA 412 Series	B-14 B-15		
	SPG-OXY2AL44	44	244	6.9	2 265	156				

<sup>3</sup> Note that product codes are not all listed in the table above. If you do not see what you need please speak to your ALC representative.

## AVAILABLE PURES AND COMPOUNDS\*

Air Liquide offers the most comprehensive inventory of blending components in the world. A listing of the many compounds that Air Liquide can provide as a pure or used in the preparation of mixtures is provided below, including alkanes, alkenes, aromatics, halocarbons, semiconductor gases, isotopes and deuterated materials. Air Liquide can also synthesize compounds that are not generally available.

Acetaldehyde	Butanol	Chlorodifluoromethane	Dibromomethane	2,3-Dimethylpentane
Acetic Acid	i-Butane	1-Chloro-1,1-difluoroethane	1,2-Dibromoethane	2,4-Dimethylpentane
Acetone	n-Butane	Chloroethane	1,2-Dibromoethylene	2,3-Dimethyl-1-pentene
Acetonitrile	i-Butanethiol	Chloroethylene	Di-t-butyl-Disulfide	Di-t-butyl Disulfide
Acetophenone	n-Butanethiol	1-Chloro-1-fluoroethane	Dichlorobenzene (o,m,p)	Di-i-propyl Disulfide
Acetyl Chloride	i-Butanol	1-Chloro-1-fluoroethylene	1,4-Dichlorobutane	Di-n-propyl Disulfide
Acetylacetone	n-Butanol	1-Chloro-3-fluorobenzene	1,4-Dichloro-2-butene, cis-	Di-i-propyl Sulfide
Acetylene	t-Butanol	Chloroform	1,4-Dichloro-2-butene, trans-	Di-n-propyl Sulfide
Acetylene Dibromide	2-Butanone	Chloromethane	3,4-Dichloro-1-butene	Dimethyl Acetamide
Acetylene Dichloride	1-Butene	2-Chloroethyl Ethyl Sulfide	1,1-Dichloro-1-fluoroethane	Dimethyl Disulfide
Acetylene Tetrachloride	2-Butene, cis-	2-Chloroethyl Vinyl Ether	Dichlorodifluoromethane	Dimethyl Ether
Acrylic Acid	2-Butene, trans-	Chloromethyl Methyl Sulfide	Dichloroethane	Dimethyl Formamide
Acrylonitrile	Butyl Acetate	2-Chloro-2-methylpropane	Dichloroethylene	Dimethyl Sulfide
Allene	i-Butyl Acetate	Chloropentafluoroethane	1,2-Dichloroethylene, cis-	Dimethyl Sulfone
Allyl Alcohol	Butyl Acrylate	Chloropentane (all isomers)	1,2-Dichloroethylene, trans-	Dimethyl Sulfoxide
Allyl Aldehyde	i-Butyl Acrylate	1-Chloropropane	Dichlorofluoromethane	Dimethylacetamide
Allyl Chloride	Butyl Benzene (all isomers)	2-Chloropropane	Dichloromethane	2,2-Dimethyl-1-butene
Ammonia	n-Butyl Chloride	3-Chloropropylene	1,5-Dichloropentane	Dimethylcyclohexane (all isomers)
Amyl Acetate	t-Butyl Chloride	Chlorotoluene (o,m,p)	Dichloropropane	Dimethylcyclopentene (all isomers)
t-Amyl Alcohol	n-Butyl Cyclohexane	Chlorotrifluoroethylene	1,3-Dichloro-2-propanol	1,2-Dimethylcyclopentane
Amyl Chloride	n-Butyl Ether	Chlorotrifluoromethane	1,2-Dichloropropylene, cis-	1,3-Dimethylcyclopentane
t-Amyl Methyl Ether	t-Butyl Mercaptan	Cumene	1,2-Dichloropropylene, trans-	Dimethylhexane (all isomers)
Argon	s-Butyl Methyl Ether	i-Cumene	1,3-Dichloropropylene, cis-	Dodecane
Arsine	t-Butyl Methyl Ether	Cyclobutane	1,3-Dichloropropylene, trans-	Dodecene (all isomers)
Benzaldehyde	Butyl Methacrylate	Cyclodecane	Dichloro-i-propyl Ether	Ethane
Benzene	i-Butyl Methacrylate	Cycloheptane	Dicycloheptadiene	Ethanethiol
Benzyl Alcohol	1-t-Butyl-4-methylbenzene	Cycloheptene	Dicyclopentadiene	Ethanol
Benzyl Chloride	Butyl Sulfide	Cyclohexane	1,1-Diethylcyclopentane	Ethyl Acetate
Benzyl Mercaptan	n-Butylbenzene	Cyclohexanol	Diethyl Disulfide	Ethyl Acetylene
Biphenyl	i-Butylbenzene	Cyclohexanone	Diethyl Ether	Ethyl Acrylate
Boron Trichloride	i-Butylene	Cyclohexene	Diethyl Sulfide	2-Ethyl-1-butene
Boron Trifluoride	1,2-Butylene Oxide	Cyclooctane	Diethylbenzene (o,m,p)	Ethyl t-Butyl Ether
Bromobenzene	1-Butyne	Cyclopentadiene	Diethylene Glycol Diethyl Ether	2-Ethyl-1-hexene
Bromochloromethane	2-Butyne	Cyclopentane	Diethylene Glycol Dimethyl Ether	Ethyl Phenol (all isomers)
Bromochloropropane	Carbon Dioxide	Cyclopentanone	Difluoroethane	Ethyl Methacrylate
Bromodichloromethane	Carbon Disulfide	Cyclopentene	1,1-Difluoroethylene	Ethyl Methyl Sulfide
Bromoethane	Carbon Monoxide	Cyclopropane	Difluoromethane	Ethyl Sulfide
Bromoethylene	Carbon Tetrachloride	Decane	2,2-Difluoropropane	Ethyl Toluene (o,m,p)
1-Bromo-4-fluorobenzene	Carbon Tetrafluoride	i-Decane	1,2-Difluorotetrachloroethane	Ethylbenzene
Bromoform	Carbonyl Fluoride	Decene (all isomers)	2,2-Dimethylbutane	Ethylcyclohexane
Bromomethane	Carbonyl Sulfide	Deuterium	2,3-Dimethylbutane	1-Ethylcyclohexene
Bromotrifluoroethylene	Chlorine	Dibromochloromethane	2,3-Dimethyl-1-butene	Ethylcyclopentane
Bromotrifluoromethane	Chloroacetone	1-2-Dibromo-3-chloropropane	1,3-Dimethyl-4-ethylbenzene	2-Ethylhexyl Acetate
1,2-Butadiene	Chlorobenzene	1,2-Dibromo-1,1-difluoroethane	Dimethylheptane (all isomers)	2-Ethylhexyl Acrylate
1,3-Butadiene	Chlorobutane (all isomers)	Dibromofluoromethane	2,2-Dimethylpentane	Ethylene

 Reactive

 Nonreactive

\* This is a partial listing. Inquire about the availability of other gases. Materials are subject to availability at the time of purchase.



Ethylene Glycol Diethyl Ether	n-Heptane	3-Methyl-2-pentene, cis-	Octene (all isomers)	Sulfur Dioxide
Ethylene Glycol Diphenyl Ether	Heptene (all isomers)	3-Methyl-2-pentene, trans-	n-Octyl Acetate	Tetrachloroethane (all isomers)
Ethylene Oxide	Hexadiene (all isomers)	4-Methyl-2-pentene, trans-	Oxygen	Tetrachloroethylene
3-Ethylpentane	Hexanal	1-Methyl-1-phenylethylene	Pentachloroethane	Tetrafluoroethane
Ethyltoluene (all isomers)	i-Hexane	1-Methyl-2-propanethiol	Pentadiene (all isomers)	Tetrahydrofuran
Fluorine	n-Hexane	2-Methyl-1-propanethiol	1,3-Pentadiene, trans-	Tetramethylbenzene (all isomers)
Fluorobenzene	1-Hexanethiol	2-Methyl-2-propanethiol	Pentafluoroethane	Trichlorobenzene (all isomers)
Fluorodecane (all isomers)	Hexanol (all isomers)	Methyl Propyl Disulfide	i-Pentane	1,1,1-Trichloroethane
Fluoroethylene	Hexanone (all isomers)	1-Methyl-2-propylbenzene	n-Pentane	1,1,2-Trichloroethane
Fluoroethane	Hexene (all isomers)	1-Methyl-3-propylbenzene	i-Pentanethiol	Trichloroethylene
Fluoropropane (all isomers)	Hydrogen	Methyl Vinyl Ether	n-Pentanethiol	Trichlorofluoromethane
Fluorotoluene (all isomers)	Hydrogen Arsenide	Methyl Vinyl Ketone	Pentanol (all isomers)	Trichloropropane (all isomers)
Fluoromethane	Hydrogen Bromide	Methylcyclohexane	Pentanone (all isomers)	Triethylbenzene
Formaldehyde	Hydrogen Chloride	Methylcyclohexene (all isomers)	Pentene (all isomers)	1,1,1-Trifluoroethane
Formic Acid	Hydrogen Cyanide	Methylcyclopentene (all isomers)	n-Pentyl Benzene	1,1,2-Trifluoroethane
Gasoline (specify formulation)	Hydrogen Fluoride	Methylcyclopropane	Pentyne (all isomers)	2,2,2-Trifluoroethanethiol
Reformulated Gasoline (RFG)	Hydrogen Sulfide	Methylheptane (all isomers)	Perchloroethane	2,2,2-Trifluoroethanol
Halocarbon 11	Isoprene	Methylhexane (all isomers)	Perfluorobenzene	Trifluorochloroethylene
Halocarbon 12	Krypton	Methylnonane (all isomers)	Perfluorobutane	Trifluoromethane
Halocarbon 13	Methacrylonitrile	Methyloctane (all isomers)	Perfluorocyclobutane	2,2,4-Trimethyl-1-pentene
Halocarbon 13b1	Methane	Methylpentane (all isomers)	Perfluoroethane	2,2,4-Trimethyl-2-pentene
Halocarbon 14	Methanethiol	Methylphenol (all isomers)	Phenol	2,3,3-Trimethyl-1-butene
Halocarbon 21	Methanol	2-Methylpropionitrile	Phenyl Acetylene	2,4,4-Trimethyl-1-pentene
Halocarbon 22	Methyl Acetate	n-Methylpyrrolidone	Phosgene	2,2,3-Trimethylbutane
Halocarbon 31	Methyl Acetylene	2-Methylthiophene	Propanal	Trimethylbenzene (all isomers)
Halocarbon 32	Methyl Acrylate	3-Methylthiophene	Propane	1,3,5-Trimethylcyclohexane
Halocarbon 112a	2-Methyl-1,3-butadiene	Naphthalene	i-Propanethiol	1,2,3-Trimethylcyclopentene
Halocarbon 113	2-Methyl-1-butanethiol	Neon	n-Propanethiol	Trimethylhexane (all isomers)
Halocarbon 114	2-Methyl-1-butene	Neopentane	n-Propanol	2,3,5-Trimethylhexane
Halocarbon 114a	3-Methyl-1-butene	Nitric Oxide	Propionitrile	Trimethylpentane (all isomers)
Halocarbon 115	Methyl Ethyl Ether	Nitrobenzene	i-Propyl Acetate	2,2,3-Trimethylpentane
Halocarbon 116	Methyl Ethyl Sulfide	Nitrogen Dioxide	n-Propyl Acetate	Undecane
Halocarbon 123	Methyl Formate	Nitrogen Trifluoride	i-Propyl Alcohol	Undecene (all isomers)
Halocarbon 123a	2-Methyl-1-heptene	Nitromethane	Propyl Cellosolve	4-Vinyl-1-cyclohexene
Halocarbon 134a	3-Methyl-2-hexanone	2-Nitropropane	i-Propyl Ether	Vinyl Acetate
Halocarbon 143	4-Methyl-1-hexene	3-Nitrotoluene	i-Propyl Fluoride	Vinyl Acetylene
Halocarbon 143a	Methyl Isocyanate	Nitrous Oxide	i-Propyl Sulfide	Vinyl Bromide
Halocarbon 152a	Methyl Methacrylate	i-Nonane	Propylcyclohexane (all isomers)	Vinyl Carbinol
Halocarbon 216	2-Methyl-1-octene	n-Nonane	Propylcyclopentane (all isomers)	Vinyl Chloride
Halocarbon 502	3-Methyl-1,4-pentadiene	Nonene (all isomers)	Propylene	Vinyl Fluoride
Halocarbon 1211	3-Methyl-2-pentanone	Octadiene (all isomers)	Propylene Carbonate	Vinyl Toluene
Helium	4-Methyl-2-pentanone	Octanal	Propylene Chloride	Toluene
Heptanal	2-Methyl-1-pentene	i-Octane	Propylene Oxide	Water
2-Heptanone	2-Methyl-2-pentene	n-Octane	Propyltoluene (all isomers)	Xenon
i-Heptane	3-Methyl-1-pentene	Octanone	Styrene	Xylene (o,m,p)

Reactive

Nonreactive

\* This is a partial listing. Inquire about the availability of other gases. Materials are subject to availability at the time of purchase.

# CHARACTERISTICS OF GAS MIXTURES

As a member of the worldwide group of Air Liquide companies, Air Liquide Canada can offer its valued clients a full range of specialty gas mixtures for a limitless variety of applications. Air Liquide draws upon the expertise developed in our research laboratories and our extensive experience as the world leader in the compressed gas industry to provide gas mixtures of top quality.

## Gas Compatibility

Components in a gas mixture may react with each other or with the materials of construction of the cylinder. These laws of nature may prevent the preparation of particular gas mixtures, please contact your Air Liquide representative to ensure the feasibility of the requested mixture.

For your safety and to help ensure the stability of mixtures, Air Liquide strongly recommends that the following steps be followed:

- + **Avoid exposing the cylinders to temperatures below 10°C**
- + **Withdraw the gas at temperatures between 15°C and 25°C**
- + **Do not withdraw the gas at excessive rates, i.e., there should be no evidence of frost on the gas handling equipment**
- + **Do not use the gas once the pressure in the cylinder is below 10% of its initial pressure**
- + **Use the appropriate gas handling equipment**

Air Liquide's highly qualified personnel are available to offer our clients support and advice in the choice of appropriate and safe gas handling systems for any application.

## GRADES OF GAS MIXTURES

Air Liquide Canada offers gas or liquid mixtures in the following standard grades: primary, certified Plus, certified, EPA Protocol, custom and unanalyzed. Unless otherwise stated the concentrations of all the components in the mixture are reported in molar percentage.

### Primary Mixtures

These mixtures are prepared on high sensitivity, high load scales or balances which have been calibrated with weights traceable to NIST (National Institute of Science and Technology) standard weights. The molar concentration of each component is reported based on the weight of the component introduced into the cylinder. As an additional verification of the accuracy of the reported concentration, each cylinder is analyzed with an appropriate method to ensure that no errors were made in the preparation of the mixture.

### Certified Plus Mixtures

Certified Plus Mixtures are an economical alternative to mixtures requiring tighter

preparation tolerances. These mixtures are prepared by a variety of methods, including gravimetric procedures.

### Certified Mixtures

These mixtures are prepared using well tested gravimetric or manometric methods. Each cylinder is analyzed using the appropriate analytical technique and the result of the analysis is reported for each cylinder.

### EPA Protocol Mixtures

EPA Protocol Gases are gas mixtures prepared and analyzed according to current Environmental Protection Agency (EPA) guidelines. Procedures for the preparation and analysis of these protocol mixtures were developed by the efforts involving the EPA, the NIST and the Specialty Gas Industry to ensure that gas mixtures supplied in accordance with the protocols can be traced back to NIST Standard Reference Materials (SRM) or equivalent.

### Custom Mixture

The potential variations in the nature, number and concentration of components in a gas mixture allow for an almost infinite number of possibilities. If you need a gas mixture which is not listed in the catalogue, or your required specifications are different from those which are published, consult your nearest Air Liquide representative.

### Unanalyzed Mixtures

These mixtures are prepared using the same technique as for certified mixtures however the cylinders are not analyzed after the production of the mixture. The nominal concentration of each component in the mixture is however reported.

# GAS AND LIQUID MIXTURES TYPICAL SPECIFICATIONS

Our product classes redefine mixture versatility. Each has unique specifications to meet different needs as summarized below. Refer to the previous page for additional information about each product class.

TYPICAL SPECIFICATIONS	EPA PROTOCOL		CERTIFIED		
	RATA Class™	Compliance Class™	Primary	Certified Plus	Certified
Typical Applications	Calibration Standards to Meet Government Regulations		Calibration and Process Control		
<b>Concentration Range</b>					
1-49 ppm	Blend Tolerance ±%	5	10	5	20
	Analytical Accuracy ±%	1	2	5	5
50-99 ppm	Blend Tolerance ±%	5	5	5	20
	Analytical Accuracy ±%	1	2	5	5
100-9999 ppm	Blend Tolerance ±%	5	5	5	20
	Analytical Accuracy ±%	1	1% of smallest component	5	5
1-1.9%	Blend Tolerance ±%	5	2	2	10
	Analytical Accuracy ±%	1	1% of smallest component	2	2
2-15.9%	Blend Tolerance ±%	5	1	1	5
	Analytical Accuracy ±%	1	1% of smallest component	2	2
16-49%	Blend Tolerance ±%	5	1	1	5
	Analytical Accuracy ±%	1	1% of smallest component	2	2
Analytical Traceability	NIST, VSL or Other Recognized Reference Standard		Air Liquide or Other Reference Standards		
Process Traceability	Not Applicable		Weight, Pressure or Standards		

## GAS MIXTURE SPECIFICATIONS

### Nominal Concentration

The concentration of the component which is desired is referred to as the nominal concentration. This is the target for the mixture preparation.

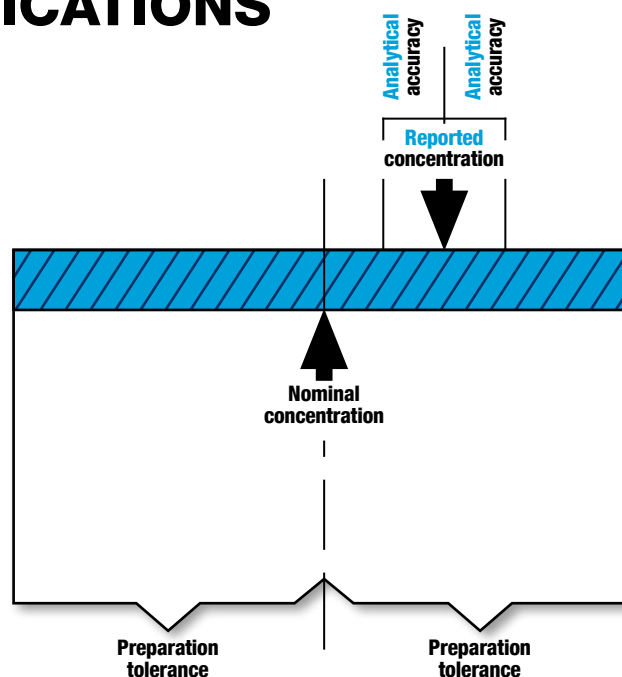
### Preparation Tolerance

This is the range in which the component concentration may actually fall relative to the nominal concentration.

### Certification Accuracy

This is the range of actual component concentration relative to the component concentration as reported on the cylinder analysis tag or analytical techniques to certify its gas mixtures.

These concepts are represented graphically in figure 1. The standard specifications for gas mixtures offered are illustrated in the table above.



## Pressure Regulators - SCOTT

SPECIALTY  
GASES**MODEL 3300**SINGLE-STAGE HIGH-PURITY BRASS REGULATOR |  
NONCORROSIVE SERVICE

Provides excellent service wherever high-pressure delivery of noncorrosive gases is needed. Brass construction protects gas purity and ensures long service life of the regulator.

**MODEL 318**TWO-STAGE HIGH-PURITY BRASS REGULATOR |  
NONCORROSIVE SERVICE

Recommended wherever precise, high-pressure delivery of high-purity gases is needed. Brass construction protects gas purity and ensures long regulator service life when used with noncorrosive gases.

**ADVANCED FEATURES**

Stainless steel diaphragm minimizes diffusion of air into regulator to eliminate off-gassing • Brass diaphragm-sealed outlet valve provides on/off flow control and helps maintain gas purity • Filter traps foreign matter, extends regulator life and reduces maintenance • Easy panel mounting • Sintered filter protects internal parts

**TYPICAL APPLICATIONS**

Gas supply purging • Gas system charging • AA fuel gas supply control • Calibration gas control • Gas chromatography • Ultra high purity carrier gases • Zero, span, and calibration gases • Ultra High purity chamber pressurization • General laboratory gas control • EPA Protocol standards and gases • Research grade gases

**MODEL 213**SINGLE-STAGE HIGH-PURITY STAINLESS STEEL  
REGULATOR | CORROSIVE SERVICE

Excellent for applications involving high delivery pressure of corrosive gas where maintenance of gas purity is essential. High quality stainless steel construction protects gas purity and ensures long regulator service life. Convulsed stainless steel diaphragm design provides excellent delivery pressure accuracy. Sintered filter protects internal components.

**MODEL 215**TWO-STAGE HIGH-PURITY STAINLESS STEEL  
REGULATOR | CORROSIVE SERVICE

Provides outstanding performance in applications involving high delivery pressure of corrosive gas where gas purity is essential. High quality stainless steel construction protects gas purity and ensures long regulator service life. Sintered filter protects internal parts.

**ADVANCED FEATURES**

Stainless steel diaphragm minimizes diffusion of air into regulator and eliminates off-gassing • Filter traps foreign matter, extends regulator life and reduces maintenance • Easy panel mounting • Stainless steel diaphragm-sealed outlet valve provides on/off flow control and helps maintain gas purity

**TYPICAL APPLICATIONS**

Gas supply purging • Gas system charging • AA fuel gas supply control • Calibration gas control • Gas chromatography • Ultra high purity carrier gases • Zero, span, and calibration gases • Ultra high purity chamber pressurization • General laboratory gas control • EPA Protocol standards and gases • Toxic and corrosive gases • Research grade gases

**MODEL 205**SINGLE-STAGE HIGH-PURITY CHROME-PLATED BRASS  
LABORATORY REGULATOR | NONCORROSIVE SERVICE

Designed for high-purity laboratory applications involving noncorrosive gas. Chrome-plated surface provides polished appearance for easy cleaning.

**MODEL 211**TWO-STAGE HIGH-PURITY CHROME-PLATED BRASS  
LABORATORY REGULATOR | NONCORROSIVE SERVICE**ADVANCED FEATURES**

Stainless steel diaphragm minimizes diffusion of air into regulator and eliminates off-gassing • High-purity regulator design permits vacuum purging of regulator • Sintered metal filters in seat assembly trap foreign particles and extend regulator service life • Chrome-plated outlet valve with diaphragm seal provides on/off flow control and helps maintain gas purity

**TYPICAL APPLICATIONS**

Gas supply purging • Gas system charging • AA fuel gas supply control • Calibration gas control • High purity chamber pressurization • General laboratory gas control • High purity carrier gases



## Pressure Regulators - CONCOA

## SINGLE STAGE REGULATORS

**422 SERIES**SINGLE STAGE STAINLESS STEEL  
ULTRA HIGH PURITY REGULATOR

The 422 Series regulators are intended for primary pressure control of non-corrosive, ultra high purity and corrosive gases in applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

**ADVANCED FEATURES**

316L stainless steel barstock body • 316L stainless steel diaphragm • Metal-to-metal diaphragm seal • Pressure ranges 0-15 to 0-250 PSIG • Front and rear panel-mountable •  $1 \times 10^{-9}$  scc/sec helium leak integrity

**TYPICAL APPLICATIONS**

Corrosive gases • Ultra-high purity carrier gases • Gas and liquid chromatography • Liquefied hydrocarbon gas control of cryogenic gases • Zero, span, and calibration gases

**402 SERIES**SINGLE STAGE BRASS ULTRA HIGH  
PURITY REGULATOR

The 402 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases or for applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

**ADVANCED FEATURES**

Brass barstock body • 316L stainless steel diaphragm • Metal-to-metal diaphragm seal • Pressure ranges 0-15 to 0-500 PSIG • Front panel-mountable •  $1 \times 10^{-9}$  scc/sec helium leak integrity

**TYPICAL APPLICATIONS**

Bulk gas distribution systems • EPA Protocol Standards • Gas and liquid chromatography • High purity carrier gases • Zero, span, and calibration gases

**302 SERIES**SINGLE STAGE BRASS ULTRA HIGH  
PURITY REGULATOR

The 302 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases or for applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

**ADVANCED FEATURES**

Chrome-plated forged brass body • 316L stainless steel diaphragm • Compact design • Rear panel-mountable • Pressure ranges 0-15 to 0-500 PSIG •  $1 \times 10^{-8}$  scc/sec helium leak integrity

**TYPICAL APPLICATIONS**

Gas and liquid chromatography • Ultra high purity carrier gases • Zero, span, and calibration gases • High purity chamber pressurization • Liquefied hydrocarbon gas control • Control of cryogenic gases • General laboratory gas control

## TWO STAGE REGULATORS

**412 SERIES**TWO STAGE BRASS ULTRA HIGH  
PURITY REGULATOR

The 412 Series regulators are intended for primary pressure control of non-corrosive, ultra high purity or liquefied gases or for applications requiring constant pressure control and delivery regardless of supply pressure variations.

**ADVANCED FEATURES**

Brass barstock body • 316L stainless steel diaphragm • Metal-to-metal diaphragm seal • Pressure ranges 0-15 to 0-250 PSIG • Front panel-mountable •  $1 \times 10^{-9}$  scc/sec helium leak integrity

**TYPICAL APPLICATIONS**

EPA Protocol Gases • Gas and liquid chromatography • High purity chamber pressurization • High purity carrier gases • Zero, span, and calibration gases

**430 SERIES**

SILCONERT™ 1020 TWO STAGE REGULATOR \*

The 430 Series silicon inert regulators are intended for primary pressure control of reactive or corrosive calibration gases that require precise and constant outlet pressure control, regardless of inlet pressure variation. Available with a wide selection of inlet and outlet options including diaphragm valves, compression tube fittings, and protocol through protocol alarm stations, all with the same SilcoNert 1020 wetted internals.

**ADVANCED FEATURES**

Improve H<sub>2</sub>S sample accuracy • Eliminate H<sub>2</sub>S absorption • Eliminate cross reaction of sulfurs • Resist corrosion 100 times better than 316L stainless steel • Eliminate mercury absorption • Improve low sulfur diesel analysis • Improve Relative Accuracy Test Audits (RATA) results

**TYPICAL APPLICATIONS**

H<sub>2</sub>S analysis ppm to ppb levels • Reduced sulfur analysis • Low sulfur diesel • Refinery stack monitoring • Natural gas testing • NO/SO<sub>2</sub> monitoring • Mercury analysis • Odorant testing • Stack gas monitoring • Automotive exhaust testing • International Society of Beverage Technologist (ISBT) CO<sub>2</sub> testing

**332 SERIES**TWO STAGE STAINLESS STEEL  
ULTRA HIGH PURITY REGULATOR

The 332 Series regulators are intended for primary pressure control of ultra high purity or corrosive gases for applications requiring constant pressure control and delivery regardless of supply pressure variations.

**ADVANCED FEATURES**

316L stainless steel barstock body • 316L stainless steel diaphragm • Pressure ranges 0-15 to 0-500 PSIG • Compact design • Rear panel-mountable •  $1 \times 10^{-8}$  scc/sec helium leak integrity

**TYPICAL APPLICATIONS**

EPA Protocol gases • Gas and liquid chromatography • High purity carrier gases • Zero, span, and calibration gases • High purity chamber pressurization

\* SilcoNert 1020 also offered in Single Stage (420 Series)

The regulator models in this section are a sample of the available models; please speak to your Air Liquide representative for more details.

## Equipment

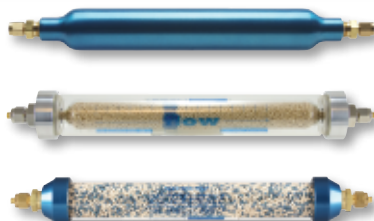
SPECIALTY  
GASES

Choosing the right equipment ensures proper functioning of your application while maintaining personnel safety. Regardless of what types of compressed gases or cryogenic liquids you are using, our complete equipment inventory includes everything you need to get the job done—from cylinder storage and transport to distribution filters and fittings. Do it safely, efficiently and cost-effectively with equipment provided by Air Liquide.



## GAS DETECTION SYSTEMS

Gas monitor systems provide dependable protection whenever hazardous gases are stored or in use. To protect life and property, portable and fixed models are available. Fixed systems offer single and multi-channel controllers to properly cover the area to monitor. Portable systems focus on ease-of-use, maximum durability and convenience.



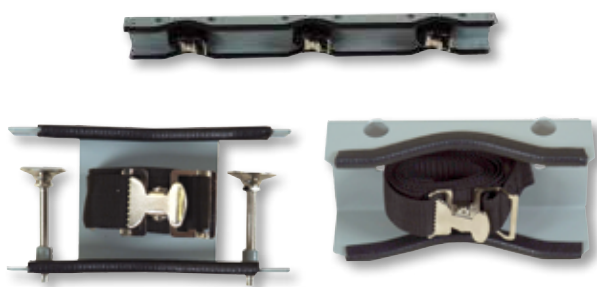
## TRAPS

A clean gas stream helps guarantee the quality of your analysis and the reliability of your results. It also helps prolong column life and minimizes detector noise. Traps act as an insurance policy, protecting your instrumentation and analytical columns from contaminants such as; oxygen, moisture and hydrocarbons.



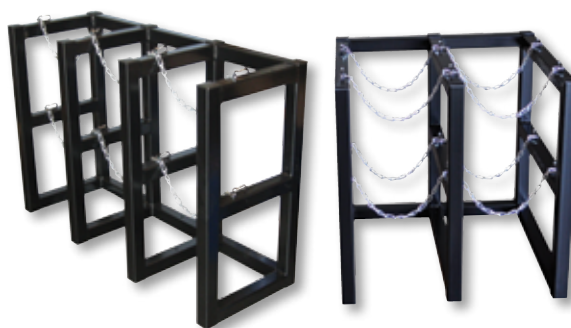
## HEATING AND INSOLATING CYLINDER JACKETS

Mixing several hydrocarbon components in a cylinder and exposing it to inappropriate temperatures can seriously compromise the accuracy of a mixture. Heating and insulating cylinder jackets eliminate inaccurate calibration and process control by preventing cylinder contents from condensing. In addition, closed-cell foam insulation, with silicone-impregnated fiberglass liner and polyester exterior jacket, provides long-lasting weather protection.



## GAS CYLINDER BRACKETS

Prevent cylinder tipping by safely securing and supporting gas cylinder at all times with gas cylinder brackets designed for either walls or benches. Brackets can hold cylinders up to 14" (356 mm) in diameter and are available in various configurations to secure one to multiple cylinders.



## GAS CYLINDER BARRICADES

Barricades provide a convenient means to organize gas cylinder storage. They are particularly recommended for cylinders exposed to vehicle traffic or material handling equipment collisions. The steel chains make cylinder racking easy and convenient. Racks are available in standard and custom configurations from one to 16 cylinder capacity.

*The equipment shown is only a sample of the equipment Air Liquide has to offer. Speak to your Air Liquide representative today to see how we can help you!*

## Equipment



## GAS CYLINDER CABINETS

Cabinets aim to isolate hazardous gas cylinders from the surrounding workplace. The cabinet exhaust vent is designed to be coupled with a fan to provide a local exhaust gas control system, maximizing operator safety when working with hazardous gases. These cabinets also protect cylinders and delivery systems from accidental contact, unauthorized handling and tampering. They can safely store one to four standard size gas cylinders.



## GAS CYLINDER PROCESS STATIONS

Process stations are designed to provide a safe and cost-effective means to mount gas cylinders and gas delivery systems where wall space is inaccessible. They are available in various configurations and can be supplied with or without process panels. Process panels can be used to mount changeovers, regulators, valves and other types of gas delivery systems.

SPECIALTY  
GASES

### Additional Equipment Available

Many other items are available to respond to your various needs and storage requirements. They include, but are not limited to:

- |  |                                  |
|--|----------------------------------|
| + Cryogenic storage vessels and freezers | + High purity valves             |
| + Flexible stainless steel hoses         | + Check valves                   |
| + Rotameters                             | + Excess flow valves             |
| + Mass flowmeters and controllers        | + Tube / compression fitting     |
| + Gas generators                         | + CGA fitting                    |
| + Filters and purifiers                  | + Cart, hand trucks and carriers |
| + Cylinders scales                       |                                  |



### MORE INFORMATION?

You could not find an item or you are not sure what you need? Call us at **1-800-817-7697** and talk to our experts. We can assess your specific application and recommend the most efficient and cost-effective gear that will safely meet all of your application needs.

## Gas Distribution Equipment

SPECIALTY  
GASES

To protect the integrity of the gases while delivering them safely to your point-of-use, we offer several gas distribution equipment adapted to specialty gas needs. Air Liquide also has the capabilities to design and build a custom gas delivery system for your application.

## POINT-OF-USE PANELS

A point-of-use panel provides a practical way to regulate and control specialty gases at the process point, especially when gases are stored in a remote location. Panels can incorporate several regulators, protecting the integrity of laboratory gases as well as lab instruments. Rear entry inlet ports allow for tubing to be installed safely behind the panel.



## SWITCHOVER MANIFOLDS

Switchover manifolds ensure continuous flow of gas between a primary and a secondary or backup supply. When a primary gas supply has been depleted, the unit switches to a secondary supply, either automatically or manually. Use of a switchover system prevents gas outages caused by empty cylinders or the waste of gas due to premature cylinder changeouts. As a result, switchovers have a direct impact on operating and labor costs. Multiple models are available to match specific needs.

A new generation of switchover systems is now available such as Concoa's IntelliSwitch II™. It features an onboard web server and proprietary embedded software. This allows remote monitoring, secure system configuration and e-mail notification of real-time system status and events. It is ideally suited for interchangeable service/continuous supply in analytical laboratory, chemical process, instrumentation, and critical gas supply applications.



### MORE INFORMATION?

You could not find an item or you are not sure what you need? Call us at **1-800-817-7697** and talk to our experts. We can assess your specific application and recommend the most efficient and cost-effective gear that will safely meet all of your application needs.



# OMNIWELD

## Integrated Solutions



Why choose Omniweld

2

Lean Manufacturing

4

Lean Welding Assessment

5

Kaizen

6

Arcal Consultant: welding cost calculator

6



# WHY CHOOSE OMNIWELD?

A division of Air Liquide Canada Inc., Omniweld Integrated Solutions was created to provide solutions to welding and cutting metal fabrication businesses. Omniweld is comprised of a team of seasoned welding professionals. They offer a proven continuous improvement methodology, based on Lean principles, to optimize the performance of your welding operations.

If you cannot measure, you cannot manage the improvements. Omniweld offers instrumentation for measurement and proven methods to improve your throughput, in robotic, automated and manual operations.

Engineers and technologists perform the welding assessments taking part in activities at your site. Working at all levels; Omniweld professionals coach management, supervision and welders, providing specific training to achieve objectives set forth in the assessments for change management.

Omniweld offers expert opinions, flexible and efficient solutions to your needs for welding expertise.

## OMNIWELD SERVICES

- + Welding Lean assessments for throughput and productivity
- + Retained Welding Engineering for CWB company certification
- + Development of arc welding procedures for ASME, CSA Z662, etc.
- + Welding Project management
- + Omniweld Training, certified under Emploi Quebec Bill 90
- + Omniweld Welding School & CWB test centers
- + ManageAL - Supply chain efficient solutions (track assets, control inventory and manage supply chain information)
- + Site safety audits

ManageAL™  
Supply Chain Solutions



For elaborate details of each of the above services, please consult our web site:

[www.omniweld.ca](http://www.omniweld.ca)

[www.manageal.ca](http://www.manageal.ca)



## HERE IS WHAT OMNIWELD CUSTOMERS HAVE TO SAY:

*"Tripp-Vogt-Trottier Ltd. has been involved with Omniweld for the past few years. It has been a huge time saver for weld training alone. But also is an asset to the company for knowledge and experience.*

*I personally have used some of the advice from one of the reps. That little suggestion has saved a lot of rework and error and in turn has increased shop productivity..."*

**Production Manager TVT**

*"I wanted to take the time to express my appreciation for the outstanding workshop you provided to my staff. Your thorough knowledge and obvious passion for your craft allowed my staff to walk away from the course with a much deeper understanding of both welding theory and practice.*

*We all sincerely appreciate your efforts and look forward to another workshop in the future to focus on problem solving some of the more unique aluminum welding issues we are dealing with here in the TSC..."*

**Director of Technical Support, University of Windsor**

*"When in a time of need: Call Air Liquide! At Formet Industries we were looking for a solution to develop a customer approved rework process for a seam welded part that could be completed in a timely and cost effective manor. The Omniweld team was sourced to help us out. We had a system tested and developed for our process and in operation in three weeks time with weld quality and productivity targets achieved. The Omniweld Team's dedication and expertise are second to none when it comes to welding! Thanks for your support..."*

**Process Engineering, Formet Industries**

*"The service we have received from Omniweld has been exceptional. The theory provided by you provided us with a better understanding of our welding procedures. Also, putting them into practice immediately with hands on training made the whole process more effective. Any problems we have had with some aluminum cracking were promptly dealt with by Omniweld when we called. A trainer was sent the next day to deal with the issue. We are a fast paced company and require support immediately upon a problem arising and Omniweld has provided us with this service. The theory, training and follow-up service we have received has been excellent. Thanks again..."*

**Manufacturing Manager Advanced Emissions Technologies**



# WHAT IS LEAN?

Lean manufacturing is focused on eliminating waste in the entire manufacturing process. It deals with minimizing work-in-process, eliminating processes that do not add value to the product, making the process flexible enough to make products of different design without compromising quality or cost. Historically, many manufacturing companies have been able to maintain bloated or inefficient methods because of a protected market, strong brand strength or huge profit margins. Global competition is forcing these manufacturers to change their methods to be less wasteful, and provide value to their customers through customization and reduced cycle or delivery times.

The Lean process starts with a macro mapping of the activity called value stream mapping and involves people at all levels in identifying areas of inefficiency. Once the inefficient problem areas are identified, groups of people work together for short periods of time in a well-documented activity called Kaizen to solve the problem. Building on small successes slowly embarks the entire enterprise on a never-ending process of continual improvement. Lean and Kaizen are work philosophies, requiring the commitment of the owner or CEO of the enterprise. Results are obtained through employee empowerment and are achieved over time.

## KEY LEAN PRINCIPLES

- + **Perfect first-time quality** through quest for zero defects, revealing and solving problems at their ultimate source, achieving higher quality and productivity simultaneously, teamwork, and worker empowerment.
- + **Waste minimization by removing all non-value-added activities**, making the most efficient use of scarce resources (capital, people, space), just-in-time inventory, eliminating any safety nets.
- + **Continuous improvement** (reducing costs, improving quality, increasing productivity) **through dynamic process of change**, simultaneous and integrated product/process development, rapid cycle time and time-to-market, openness and information sharing.
- + **Flexibility in production** of different mixes or greater diversity of products quickly, without sacrificing efficiency at lower volumes of production, through rapid set-up and manufacturing at small lot sizes.
- + **Long-term relationships with suppliers** and primary producers (assemblers, system integrators) through collaborative risk-sharing, cost-sharing and information-sharing arrangements.

For more information and how Lean can be applied in your welding operation please contact an Air Liquide representative or an Omniweld Integrated Solutions expert.

# LEAN RESOURCES NEEDED FOR AN OBJECTIVE WELDING ASSESSMENT

In order to carry out a satisfactory welding assessment to objectively quantify welding related waste, it is necessary to use various measuring devices and instruments. Without going into too much detail, a simple list of items is provided to understand what is needed to make a non-subjective welding assessment. The most important resource for the success of the Lean Journey, indeed starts with the Owner or CEO of the enterprise. Experience has shown that Lean implementation process can produce spectacular gains, when management supports this initiative.

## HUMAN RESOURCES:

- + Motivated CEO or plant manager committed to pursuing opportunities for continuous improvement. while investing in people and empowering them.
- + Internal or external experienced welding engineer/technician team with excellent, analytical, training and people skills.

## MATERIAL AND SOFTWARE RESOURCES:

- |   |   |
|---|---|
| + Calibrated length-measuring instruments   | + Ability to test fillet welds quickly with destructive tests             |
| + Stopwatch   | + Ability to produce weld macrographs for quality feedback to welders     |
| + Wire feed speed measurement device  | + Digital photography equipment   |
| + Calibrated ampere and volt meter  | + Power consumption measurement devices for welding power sources         |
| + Shielding gas flow measurement devices  | + Annualized gas and wire consumption data and pricing                    |
| + Gas saver devices   | + Cost calculation software to validate improvements of Kaizen activities |
| + Gas leak detection devices  |   |
| + Duty cycle measurement device capable of data acquisition, storage and wireless transmission over 24-hour measurement periods, for continuous improvement |   |
| + Fillet gauges, manual or electronic systems   |   |

For more information and how Lean can be applied in your welding operation please contact an Air Liquide representative or an Omniweld Integrated Solutions expert.



# KAIZEN



## WHAT IS KAIZEN?

**Kaizen** is a Japanese term that means continuous improvement, taken from words, **Kai**, which means continuous and **Zen** which means improvement. Kaizen is not a single event, but rather a continuous heart beat in an organization, embraced at all levels and applied to all aspects of the business. Kaizen is a philosophy of working! In the Kaizen philosophy any change or suggestion that contributes to the following goals, are given priority for implementation:

- + Making the job easier
- + Making the job safer
- + Improving product quality
- + Removing nuisance and drudgery from the job
- + Making the job more productive
- + Saving time and reducing cost

## KAIZEN LOOKS AT PROBLEMS AS OPPORTUNITIES FOR IMPROVEMENT

The value of improvement is obvious. Whenever process improvements are made, these improvements eventually lead to **better quality and productivity**. Improvement is therefore a process. The process starts with recognizing a need and the need becomes apparent when you recognise a problem. Kaizen puts an emphasis on problem-awareness and will lead you to identify a problem.

The real issue is that the people who create the problem are often not directly inconvenienced by it, and those affected by it, often adopt a **laissez faire** attitude. They tend to take the inconvenience for granted. In day-to-day management situations, the first instinct is to hide or ignore the problem, rather than to correct it. This happens because a problem is an unwelcome event in a non-Kaizen organization. By nature nobody wants to be accused of having created a problem. However, from a positive perspective, you can turn every problem into a valuable opportunity for improvement. Simply put, when you identify a problem, you must solve it. Through continuous monitoring, if you can consistently avoid creating the problem, you in essence, surpass a previously set standard, improving the process to a new higher level standard of performance.

For the welder, if his weld has too much reinforcement or an undercut, generous use of grinding is never questioned!! Excessive grinding in a job shop is taken for granted. This is a very expensive inconvenience. The real corrective measure would be to avoid the discrepancy in the first place through adequate skill training, immediately when it first occurs! This is where responsible monitoring and supervision can pay off!

**Kaizen can be applied to many areas of welding. It requires the involvement of everyone from top management all the way to the level of the welder and takes time to implement.** ISO 3834 Welding Quality Standard, Part 6 explains well the need for process control in welding operations and requires the involvement of top management in welding activities.

## ARCAL CONSULTANT: WELDING COST CALCULATOR

### WELDING POSITION: HORIZONTAL 2F FILLET

DATA*					
Fillet Weld size in decimal inches	0.1875 inches*				
Welding process	FCAW				
Process efficiency	85%				
Filler metal cost per pound	\$ 2.09 / pounds*				
Wire diameter	0.045 inches*				
Wire feed speed in inches per minute	410 inches / minute*				
Calculated deposition rate at 100% shop efficiency	9.43 lb / hour				
Cost of shielding gas in dollars per cu feet (CO <sub>2</sub> )	\$ 0.03 / cubic foot*				
Shielding gas flow rate in cubic foot per hour	35 cubic foot per hour (CFH)*				
Shop charge out labour rate	\$ 25.00 / hour*				
Calculated welding arc travel speed in inches per minute	14.36 inches / minute				
Measured shop duty cycle from Lean Audit	20.00%				
Calculated welding speed reflecting duty cycle from Lean Audit	14.36 feet / hour				
Shop effective deposition rate reflecting measured duty cycle	1.89 pounds per hour				
CALCULATIONS AND RESULTS	COST PER HOUR & PERCENTAGE COST BREAKDOWN		COST PER POUND & PERCENTAGE COST BREAKDOWN		COST PER FOOT & PERCENTAGE COST BREAKDOWN
LABOUR	\$ 25.00	83.8%	\$ 13.25	83.8%	\$ 1.74 84.1%
WIRE OR FILLER METAL	\$ 4.64	15.5%	\$ 2.46	15.5%	\$ 0.32 15.5%
GAS	\$ 0.20	0.7%	\$ 0.11	0.7%	\$ 0.01 0.5%
TOTAL	\$ 29.84	100%	\$ 15.82	100%	\$ 2.07 100%

\*Costs and rates are for demonstration purposes only and may vary as per the fabrication facility.



# GAS APPARATUS



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Safety Devices for Oxy-Fuel Gas Systems

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# DUO MINI

## SIZE MATTERS!

THE IDEAL CHOICE WHEN PORTABILITY AND CONVENIENCE ARE IMPORTANT!

- + Lightweight – less than 15 kg (32 lb)
- + Cuts up to 125 mm (5") thick and welds up to 10 mm (0.4") \*
- + For welding up to 5 hours or cutting for approximately 45 minutes non-stop \*\*
- + Ideal for maintenance, general repair or any application where portability is key



DUOMINI

### THE OUTFIT INCLUDES

Portable, plastic carrying case	Torch handle	Goggles
Oxygen cylinder size 4 (0.57 m³) ***	Cutting attachment	Wrench
Acetylene cylinder size 2 (0.28 m³) ***	Welding tip	Tip cleaner
Regulator for oxygen, CGA540	Cutting tip	Flint lighter
Regulator for acetylene, CGA200	Grade R twin-hose 3.8 m (12.5')	

\* With appropriate optional tips / \*\* Approximate figures / \*\*\* Gases sold separately

# ALSO AVAILABLE

DUO AND DUO JUNIOR

ITEM NUMBER	CYLINDER	VOLUME¹	
		M³	SCF
DUOMINI	Acetylene 2	0.28	10.10
	Oxygen 4	0.57	20.64
DUOJR	Acetylene 8	1.10	39.67
	Oxygen 9	1.39	50.00
DUO	Acetylene 14	2.08	75.01
	Oxygen 16	2.75	99.02

¹ m³ at 15°C; ft³ at 70°F

DUO JUNIOR



DUO



BLUESHIELD™ Outfits

# UNIVERSAL

## MEDIUM DUTY

### CUTTING, WELDING AND BRAZING

#### Medium-Duty applications

- + Cut up to 150 mm (6") \*
- + Weld up to 10 mm (0,4") \*

#### Includes

- + FIRESTORM 312 torch handle and 512B cutting attachment
- + Oxygen and acetylene regulators with rubber booted gauges
- + Welding/brazing tip, cutting tip, Grade R twin-hose, flint lighter and goggles
- + Rugged toolbox

*\* With appropriate optional tips*

#### FEATURES

- Booted gauges
- In-line configuration of the cutting attachment tubes
- Tip mixing of gases
- Brass head
- Tube-within-a-tube construction of the torch handle

#### BENEFITS

- Increased gauge life
- Excellent visibility for precision cutting
- Safer, less risk of flashback
- Reliable tip seating
- Heavy outer tube for strength and rigidity



BLU-UNI410

GAS  
APPARATUS

# PRODUCTOR

## HEAVY DUTY

### CUTTING, WELDING AND BRAZING

#### Heavy-Duty applications

- + Cut up to 200 mm (8") \*
- + Weld up to 20 mm (0,8") \*

#### Includes

- + DRAGONFIRE 322 torch handle and 522B cutting attachment
- + 104/114 oxygen and acetylene regulators with 2.5" brass gauges
- + Welding/brazing tip, cutting tip, Grade R twin-hose, flint lighter and goggles
- + Rugged toolbox

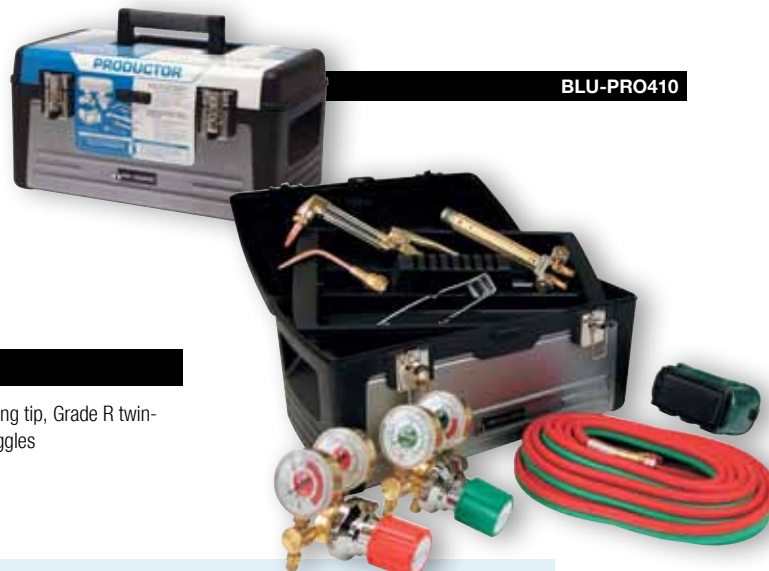
*\* With appropriate optional tips*

#### FEATURES

- Stainless steel regulator diaphragms
- Triangular configuration of the cutting attachment tubes
- Tip mixing of gases
- Die forged naval brass head
- Separate, brazed tube construction in the torch handle

#### BENEFITS

- Increased durability and low temperature resistance
- Optimized for rigidity and strength
- Safer, less risk of flashback
- Durable and safe
- Excellent flow capacity, light weight, no possibility of mixed gases in the handle



BLU-PRO410

## BLUESHIELD™ Torches



## 312 TORCH HANDLE

### MEDIUM DUTY

+ Cut to 150 mm (6")

#### Features

- + Sturdy, ribbed brass handle
- + Large, ribbed control valves, for ease of adjustment
- + Tube-within-a-tube handle design with four O-ring seals for safety and easy maintenance
- + Teflon valve packing provides long service life
- + Forged brass rear body
- + Stainless steel ball-tip valves seal tightly

ITEM NUMBER	LENGTH		WEIGHT		CGA CONNECTION
	MM	IN	G	LB	
BLU-FIR312	200	8	383	0.84	'B' - Size (9/16") - 18 RH/LH



BLU-FIR312

## 512B CUTTING ATTACHMENT

### MEDIUM DUTY

+ Cut to 150 mm (6")

+ Weld to 10 mm (0.4")

+ Heat to 47,000 BTU/hr

#### Features

- + Brass torch head
- + Three in-line tube configuration
- + Silver-brazed tube joints for leak integrity
- + Three-seat, tip-mix design for safety and multi-gas compatibility

ITEM NUMBER	LENGTH		WEIGHT	
	MM	IN	G	LB
BLU-FIR512B	216	8.5	508	1.12



BLU-FIR512B

## TIP SELECTION GUIDE

FOR USE WITH MODEL FIR312 TORCH HANDLE

**MODEL 735** multi-flame heating tip-mixer assembly

ITEM NUMBER	SIZE	HEAT OUTPUT (BTU/HR)
BLU-7356	6	37,000 - 47,000



BLU-7356



BLU-7120

**MODEL 712** SINGLE-FLAME BRAZING/WELDING TIP-MIXER ASSEMBLY.

ITEM NUMBER	SIZE	FOR METAL THICKNESS
BLU-7120	0	1.0 mm (0.04 in)
BLU-7121	1	1.5 mm (0.06 in)
BLU-7122	2	2.5 mm (0.10 in)
BLU-7123	3	3.5 mm (0.14 in)
BLU-7124	4	5.0 mm (0.20 in)
BLU-7125	5	6.5 mm (0.26 in)
BLU-7126	6	8.0 mm (0.31 in)
BLU-7127	7	10.0 mm (0.40 in)

## BLUESHIELD™ Torches



## 322 TORCH HANDLE

### HEAVY DUTY

+ Cut to 200 mm (8")

+ Weld to 20 mm (0,8")

+ Heat to 1.3 million BTU/hr

#### Features

- + Stainless steel coupling block for rugged durability
- + All-silver-brazed construction for strength, rigidity, and safety
- + Straight-through oxygen and fuel gas tubes keep gases separated for leak-proof safety
- + Light-weight, ribbed aluminum handle
- + Forged brass rear body
- + Large, ribbed control valves, silver-brazed to rear body for strength and rigidity
- + Shrouded valve packing provides long service life
- + Stainless steel ball-tip valves seal tightly
- + Spring-loaded valves with smooth torque control and anti-backlash for precise flame setting

ITEM NUMBER	LENGTH		WEIGHT		CGA CONNECTION
	MM	IN	G	LB	
BLU-DRA322	240	9.5	595	1.3	'B' - Size (9/16" - 18 RH/LH)

## 522/523 CUTTING ATTACHMENTS

### HEAVY DUTY

+ Cut to 200 mm (8")

#### Features

- + Three-seat, tip-mix design keeps gases separated for safety
- + Universal fuel gas compatibility – just install the appropriate tip
- + Silver-brazed tube joints for leak integrity
- + Nickel alloy tubes in triangular configuration for superior rigidity and strength
- + Forged naval brass or stainless steel torch head for rugged durability
- + Ease-on cutting oxygen valve provides controlled flow for easy cut starts and piercing
- + Torch adapter with tapered O-ring seals for hand-tight connection to torch handle

ITEM NUMBER	LENGTH		WEIGHT		HEAD MATERIAL
	MM	IN	G	LB	
BLU-DRA522B	250	10	700	1.5	Naval Brass
BLU-DRA522SS	250	10	700	1.5	Stainless Steel
BLU-DRA523B	330	13	770	1.7	Naval Brass
BLU-DRA523SS	330	13	770	1.7	Stainless Steel



BLU-DRA322

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BLU-DRA522SS

BLU-DRA522B



## Welding, Brazing and Heating Tip Selection Guide

# TIP SELECTION GUIDE

## FOR USE WITH MODEL DRA322 TORCH HANDLE

**MODEL 714**  
 SINGLE-FLAME BRAZING/ WELDING  
 TIP-MIXER ASSEMBLY

ITEM NUMBER	SIZE	FOR METAL THICKNESS
BLU-7140	0	1.0 mm (0.04 in)
BLU-7141	1	1.5 mm (0.06 in)
BLU-7142	2	2.5 mm (0.10 in)
BLU-7143	3	3.5 mm (0.14 in)
BLU-7144	4	5.0 mm (0.20 in)
BLU-7145	5	6.5 mm (0.26 in)
BLU-7146	6	8.0 mm (0.31 in)
BLU-7147	7	10.0 mm (0.40 in)
BLU-7148	8	12.0 mm (0.47 in)
BLU-71410	10	20.0 mm (0.80 in)



BLU-7140

**MODEL 735**  
 MULTI-FLAME HEATING TIP-MIXER  
 ASSEMBLY

ITEM NUMBER	SIZE	HEAT OUTPUT (BTU/HR)
BLU-7358	8	68,000 - 78,000
BLU-73510	10	109,000 - 125,000



BLU-7358

**MODEL 740**  
 MULTI-FLAME HEATING TIP-MIXER  
 ASSEMBLY

ITEM NUMBER	SIZE	HEAT OUTPUT (BTU/HR)
BLU-74014	14	176,000 - 200,000
BLU-74010	10	109,000 - 125,000

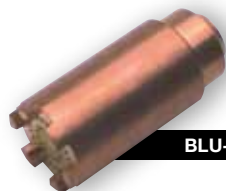


BLU-74014

# HEAVY DUTY HEATING ASSEMBLIES

## INDIVIDUAL COMPONENT SELECTION FOR USE WITH DRA322 TORCH HANDLES

- + For use in pre-heating or post-heating weldments, general heating, bending, straightening, descaling, and flame cleaning applications
- + Ensure that there is adequate supply of oxygen and fuel gas (from manifolded cylinders or pipeline) before starting work. Insufficient gas supply will cause the tip to overheat and is hazardous to personnel
- + Select a gas mixer, an extension tube, and a multi-flame heating tip from the items shown below. Choose the mixer and tip to match the fuel gas being used (DO NOT use model 2290-H tips with acetylene)
- + Use 9.5 mm (3/8") diameter, Grade T welding hose for all heavy heating applications



BLU-2290H1

**MODEL 2290-H**  
 FOR USE WITH FLAMAL 29,  
 PROPYLENE, PROPANE OR NATURAL GAS \*

ITEM NUMBER	SIZE	HEAT OUTPUT (BTU/HR)
BLU-2290H1	1	100,000 - 200,000
BLU-2290H2	2	138,000 - 325,000
BLU-2290H3	3	212,000 - 575,000
BLU-2290H4	4	400,000 - 812,000
BLU-2290H5	5	450,000 - 1,000,000

\* Do not use model 2290-H with acetylene due to risk of backfire and overheating.



BLU-7382

**MODEL 738**  
 FOR USE WITH ACETYLENE

ITEM NUMBER	SIZE	HEAT OUTPUT (BTU/HR)
BLU-7382	2	218,000 - 250,000


**GAS MIXERS WITH COUPLING NUT**

FUEL GAS	GAS MIXERS	COUPLING NUT
Flamal 29 / Propane / Natural Gas	BLU-75360	BLU-01532038
Acetylene	BLU-7531113	BLU-01532038

BLU-SSE24

**STAINLESS STEEL EXTENSION TUBES (60° BEND)**

BLU-SSE24	610 mm (24 po) long
BLU-SSE36	915 mm (36 po) long

**THREAD LEGEND:**

- ▲ 12.7 mm x 1.27 (1/2"-20)
- ◆ 12.7 mm x 1.0 (1/2"-25)

## Operational and Performance Data for Welding, Brazing and Heating Tips

# WELDING AND BRAZING TIP ASSEMBLIES

MODEL	TYPICAL APPLICATIONS	DESCRIPTION	TIP SIZE	ORIFICES	FOR METAL THICKNESS	RECOMMENDED PRESSURES		ACETYLENE CONSUMPTION * L/MIN (CFH)
				DRILL SIZE		OXYGEN KPA (PSIG)	ACETYLENE KPA (PSIG)	
712	Used with 312 torches	Long flame type.	0	#72	1.0 mm (0.04 in)	7 (1)	7 (1)	0.2 (0.4)
			1	#68	1.5 mm (0.06 in)	7 (1)	7 (1)	0.5 (1)
			2	#62	2.5 mm (0.10 in)	14 (2)	14 (2)	1 (2)
			3	#56	3.5 mm (0.14 in)	21 (3)	21 (3)	3.8 (8)
			4	#54	5.0 mm (0.20 in)	28 (4)	28 (4)	8 (17)
714	Used with 322 torches	Tip/Mixer assembly for general welding and brazing.	5	#51	6.5 mm (0.26 in)	35 (5)	35 (5)	12 (25)
			6	#46	8.0 mm (0.31 in)	42 (6)	42 (6)	16 (34)
			7	#42	10.0 mm (0.40 in)	49 (7)	49 (7)	20 (43)
			8	#38	12.0 mm (0.47 in)	56 (8)	56 (8)	25 (52)
			10	#30	20.0 mm (0.80 in)	70 (10)	70 (10)	32 (67)

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# MULTI-FLAME HEATING TIP ASSEMBLIES

MODEL	TYPICAL APPLICATIONS	DESCRIPTION	TIP SIZE	ORIFICES		RECOMMENDED PRESSURES		ACETYLENE CONSUMPTION * L/MIN (CFH)	REQUIRED NO. OF SIZE 68 ACETYLENE CYLINDERS	HEAT OUTPUT (BTU/ HR)
				NO OF HOLES	DRILL SIZE	OXYGEN KPA (PSIG)	ACETYLENE KPA (PSIG)			
735	Used with 312 torches	Multi-flame tip/mixer assembly for medium duty heating applications	6	6	#67	42-49 (6-7)	35-42 (5-6)	12-15 (25-32)	1	37,000 - 47,000
735	Used with 322 torches	Multi-flame tip/mixer assembly for heavy duty heating applications	8	8	#58	56-63 (8-9)	49-56 (7-8)	22-25 (46-53)	1	68,000 - 78,000
			10	10		70-77 (10-11)	63-70 (9-10)	35-40 (74-85)	2	109,000 - 125,000
740	Used with 322 torches	Multi-flame tip/mixer assembly for heavy duty heating, bending, straightening and hardening applications	10	10	#58	70-77 (10-11)	63-70 (9-10)	35-40 (74-85)	2	109,000 - 125,000
			14	10	#52	98-105 (14-15)	91-98 (13-14)	57-64 (120-136)	3	176,000 - 200,000

\* NOTE: Multiply acetylene consumption by 1.1 to obtain oxygen consumption.

## Operational and Performance Data for Welding, Brazing and Heating Tips

## SEPARABLE, MULTI-FLAME HEATING TIPS

## ACETYLENE

MODEL	TYPICAL APPLICATIONS	MIXER REQUIRED	TIP SIZE	RECOMMENDED PRESSURES		OXYGEN CONSUMPTION L/MIN (CFH)	ACETYLENE CONSUMPTION L/MIN (CFH)	REQUIRED NO. OF SIZE 69 ACETYLENE CYLINDERS	HEAT OUTPUT (BTU/HR)
				OXYGEN KPA (PSIG)	ACETYLENE KPA (PSIG)				
738	Used with 322 torches	BLU-7531113	2	55-70 (8-10)	40-55 (6-8)	82-95 (175-200)	70-80 (148-170)	3 - 4	218,000 - 250,000

## FLAMAL 29 / PROPYLENE\*

MODEL	TYPICAL APPLICATIONS	MIXER REQUIRED	TIP SIZE	RECOMMENDED PRESSURES		OXYGEN CONSUMPTION L/MIN (CFH)	FLAMAL 29 CONSUMPTION L/MIN (CFH)	REQUIRED NO. OF SIZE 108 FLAMAL 29 CYLINDERS	HEAT OUTPUT (BTU/HR)
				OXYGEN KPA (PSIG)	FLAMAL 29 KPA (PSIG)				
2290-H	Used with 322 torches	BLU-75360	1	70-175 (10-25)	28-84 (4-12)	65-130 (140-280)	19-38 (40-80)	1 - 2	95,000 - 190,000
			2	105-315 (15-45)	49-154 (7-22)	90-215 (190-455)	26-60 (55-130)	1 - 2	130,000 - 308,000
			3	175-490 (25-70)	56-175 (8-25)	140-380 (295-805)	40-110 (85-230)	2 - 3	200,000 - 545,000
			4	350-770 (50-110)	70-210 (10-30)	265-535 (560-1135)	75-155 (160-325)	3 - 5	380,000 - 770,000
			5	420-945 (60-135)	98-280 (14-40)	300-660 (630-1400)	85-190 (180-400)	3 - 6	427,000 - 950,000

## PROPANE AND NATURAL GAS\*

MODEL	TYPICAL APPLICATIONS	MIXER REQUIRED	TIP SIZE	RECOMMENDED PRESSURES		OXYGEN CONSUMPTION L/MIN (CFH)	PROPANE CONSUMPTION L/MIN (CFH)	REQUIRED NO. OF 100 LB PROPANE CYLINDERS	HEAT OUTPUT (BTU/HR)
				OXYGEN KPA (PSIG)	PROPANE KPA (PSIG)				
2290-H	Used with 322 torches	BLU-75360	1	70-175 (10-25)	28-84 (4-12)	75-150 (160-320)	19-38 (40-80)	1 - 2	100,000 - 200,000
			2	105-315 (15-45)	49-154 (7-22)	105-245 (220-520)	26-60 (55-130)	1 - 2	138,000 - 325,000
			3	175-490 (25-70)	56-175 (8-25)	160-435 (340-920)	40-110 (85-230)	2 - 3	212,000 - 575,000
			4	350-770 (50-110)	70-210 (10-30)	300-615 (640-1300)	75-155 (160-325)	3 - 5	400,000 - 812,000
			5	420-945 (60-135)	98-280 (14-40)	340-755 (720-1600)	85-190 (180-400)	3 - 6	450,000 - 1,000,000

## IMPORTANT SAFETY NOTES

High capacity heating tips must be operated at high flow rates with forceful flames. Adjust the operating pressures with the flame lit and the torch valves wide open. Throttling back the torch valves will starve the flame, resulting in overheating of the tip and possible backfire or flashback. If a particular tip provides too much heat for the job at hand change it for a smaller one.

Use 9.5 mm (3/8") ID, Grade-T hose for all heavy heating applications.

Before starting work, ensure that adequate gas supply is available to provide sufficient volume of oxygen and fuel gas. Manifold multiple cylinders together or supply gas via a shop pipeline system to achieve required flow rates.

Acetylene withdrawal rate per cylinder should not exceed 1/7th of the cylinder capacity per hour. Flamal 29 and propane cylinder withdrawal rates are determined by the size of cylinder being used, the amount of liquid remaining in the cylinder, and the ambient temperature. The number of manifolded cylinders indicated in the above tables for Flamal 29 and propane are based on continuous withdrawal at 15°C from 30% full cylinders. Available withdrawal rate will increase if cylinders are more full or at higher temperatures, and decrease if cylinders are less full or at lower temperatures. Intermittent withdrawal may decrease the number of cylinders required compared to continuous withdrawal.

Install high flow hose line flashback arrestors and adjust regulator pressure settings to compensate for the pressure drop introduced by the safety devices.

1 L/min equals 0.06 m³/hr or 2.12 cfh.

\* NOTE: NOT for use with acetylene due to risk of backfire and overheating.

BLUESHIELD™ Torches



# MANUAL CUTTING TORCH

## HEAVY DUTY

### SAFETY AND COMFORT

- + Tip mixing of gases for safety and versatility
- + Ergonomic Design

### RUGGEDNESS AND DURABILITY

- + Naval Brass or Stainless Steel head with nickel alloy triangular tubes for superior strength and durability in heavy or extreme duty applications

### Performance

- + Cuts up to 300 mm (12 in) steel\*
  - + Excellent flow capacity
  - + Compatible with all popular fuel gases
  - + Ease-on cutting oxygen flow
  - + Spring-loaded fuel valve provides smooth torque control and anti-backlash for precise flame control
- \* With appropriate optional tips*

ITEM NUMBER	WEIGHT		LENGTH		HEAD ANGLE	APPLICATION	HEAD MATERIAL	CUTTING CAPACITY		CONNECTIONS
	KG	LB	MM	IN				MM	IN	
BLU-DIA499B	1.41	3.1	513	20.2	90°	Heavy Duty	Naval Brass	300	12	B size (9/16-18UNF) RH/LH
BLU-DIA499SS						Extreme Duty	Stainless Steel			

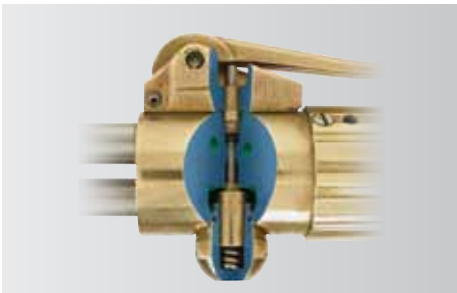


BLU-DIA499B



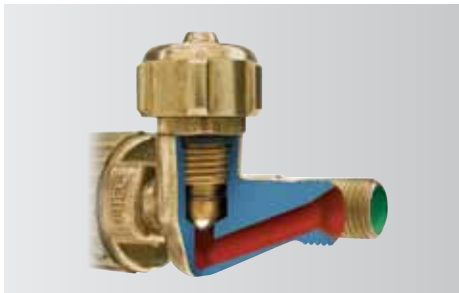
### CUTTING TIP

Tip mix design ensures maximum operator safety, allows operation with any fuel gas just by changing cutting tip, and requires less maintenance. Internal tip nut thread minimizes head damage.



### OXYGEN VALVE AND LEVER

All silver brazed tube joints provide rigidity and strength. Tapered cutting oxygen valve gives excellent ease-on control for piercing. Contoured cutting oxygen lever minimizes operator fatigue.













### VALVES AND STEEL BALL SEAT

Shrouded valves provide maximum stem protection and durability. Stainless steel ball seat ensures positive shut-off. Fuel valve is spring-loaded to provide smooth torque and anti-backlash for precise flame control.









## Cutting Tip Selection Guide

## TIPS FOR BLUESHIELD™ TORCHES







## ACETYLENE TIPS

ITEM NUMBER	APPLICATION		PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
BLU-80200	One-piece, medium preheat tip, for general purpose use.			802	4	3 mm (1/8 in)	00
BLU-8020						6 mm (1/4 in)	0
BLU-8021						13 mm (1/2 in)	1
BLU-8022						25 mm (1 in)	2
BLU-8023						38 mm (1 1/2 in)	3
BLU-8024						50 mm (2 in)	4
BLU-8025	One-piece, heavy preheat tip, for general purpose use on dirty, rusted or painted surfaces.			803	6	100 mm (4 in)	5
BLU-8026						150 mm (6 in)	6
BLU-80300						3 mm (1/8 in)	00
BLU-8030						6 mm (1/4 in)	0
BLU-8031						13 mm (1/2 in)	1
BLU-8032						25 mm (1 in)	2
BLU-8033	One-piece, light preheat tip, for straight-line and contour cutting of clean plate by hand or machine.			838	6	38 mm (1 1/2 in)	3
BLU-8034						50 mm (2 in)	4
BLU-8035						100 mm (4 in)	5
BLU-8036						150 mm (6 in)	6
BLU-8038						250 mm (10 in)	8
BLU-83800						3 mm (1/8 in)	00
BLU-8380	One-piece, medium preheat tip, bent 20°, two sides milled flat, for grooving, gouging, and removing imperfect welds.			883	6	6 mm (1/4 in)	0
BLU-8381						10 mm (3/8 in)	1
BLU-8382						19 mm (3/4 in)	2
BLU-8383						38 mm (1 1/2 in)	3
BLU-8836						8 mm x 8 mm (5/16 x 5/16 in)	6
BLU-8838						11 mm x 11 mm (7/16 x 7/16 in)	8
BLU-88310	One-piece, medium preheat tip, bent 45°, one side milled flat, for hand-cutting rivet heads and bulkheads.			895	3	13 mm (1/2 in)	2
BLU-88312						15 mm x 13 mm (9/16 x 1/2 in)	12
BLU-8951						10 mm (3/8 in)	1
BLU-8952						13 mm (1/2 in)	2
BLU-8953						19 mm (3/4 in)	3

## FLAMAL 29 / PROPYLENE TIPS

ITEM NUMBER	APPLICATION		PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
BLU-833SP68	One-piece, medium preheat tip, for general purpose hand cutting.			833 SP	8	6 mm (1/4 in)	68
BLU-833SP60						13 mm (1/2 in)	60
BLU-833SP56						25 mm (1 in)	56
BLU-833SP54						38 mm (1 1/2 in)	54
BLU-833SP52						50 mm (2 in)	52
BLU-833SP49						75 mm (3 in)	49
BLU-833SP44	Two-piece, heavy preheat tip, for hand or machine cutting.			835 FS	18	125 mm (5 in)	44
BLU-833SP38						200 mm (8 in)	38
BLU-835FS68						6 mm (1/4 in)	68
BLU-835FS65						10 mm (3/8 in)	65
BLU-835FS60						13 mm (1/2 in)	60
BLU-835FS56						25 mm (1 in)	56
BLU-835FS54	Two-piece, heavy preheat tip, divergent nozzle, for high-speed machine cutting.			836 FH	18	38 mm (1 1/2 in)	54
BLU-835FS49						50 mm (2 in)	52
BLU-835FS44						75 mm (3 in)	49
BLU-835FS38						125 mm (5 in)	44
BLU-836FH65						200 mm (8 in)	38
BLU-836FH60						10 mm (3/8 in)	65
BLU-836FH56				836 FH	20	13 mm (1/2 in)	60
BLU-836FH54						25 mm (1 in)	56
BLU-836FH52						38 mm (1 1/2 in)	54
BLU-836FH49						50 mm (2 in)	52
BLU-836FH44						75 mm (3 in)	49
						120 mm (5 in)	44

## PROPANE / NATURAL GAS TIPS









ITEM NUMBER	APPLICATION		PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
BLU-8190	Two-piece, light preheat tip, for hand or machine cutting of clean plate.			819	10	6 mm (1/4 in)	0
BLU-8191						13 mm (1/2 in)	1
BLU-8192						25 mm (1 in)	2
BLU-8193						38 mm (1 1/2 in)	3
BLU-8194						64 mm (2 1/2 in)	4
BLU-8195						100 mm (4 in)	5
BLU-8260	Two-piece, medium preheat tip, for general hand or machine cutting.			826	18	6 mm (1/4 in)	0
BLU-8261						13 mm (1/2 in)	1
BLU-8262						25 mm (1 in)	2
BLU-8263						38 mm (1 1/2 in)	3
BLU-8264						50 mm (2 in)	4
BLU-8265						75 mm (3 in)	5
BLU-8266	Two-piece, heavy preheat tip, for general hand cutting.			829	10	150 mm (6 in)	6
BLU-8291						13 mm (1/2 in)	1
BLU-8292						25 mm (1 in)	2
BLU-8293						38 mm (1 1/2 in)	3
BLU-8295						100 mm (4 in)	5
BLU-8297						200 mm (8 in)	7
BLU-82910						300 mm (12 in)	10



## Cutting Tip Selection Guide







# TIPS FOR VICTOR™, PUROX™ AND HARRIS TORCH SEAT STYLES

## ACETYLENE TIPS



ITEM NUMBER	APPLICATION		PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE			
BLU-V1101000	One-piece, medium preheat tip, for general hand or machine cutting.			VICTOR 1-101	6	3 mm (1/8 in)	000			
BLU-V110100						6 mm (1/4 in)	00			
BLU-V11010						13 mm (1/2 in)	0			
BLU-V11011						19 mm (3/4 in)	1			
BLU-V11012						38 mm (1 1/2 in)	2			
BLU-V11013						64 mm (2 1/2 in)	3			
BLU-V11014						75 mm (3 in)	4			
BLU-V11015						125 mm (5 in)	5			
BLU-V11016						200 mm (8 in)	6			
BLU-V310100						One-piece, medium preheat tip, for general hand cutting.			VICTOR 3-101	6
BLU-V31010	13 mm (1/2 in)	0								
BLU-V31011	19 mm (3/4 in)	1								
BLU-V31012	38 mm (1 1/2 in)	2								
BLU-V31013	64 mm (2 1/2 in)	3								
BLU-V31014	75 mm (3 in)	4								
BLU-V31015	125 mm (5 in)	5								
BLU-P42022			PUROX 4202	3 mm (1/8 in)	2					
BLU-P42023				6 mm (1/4 in)	3					
BLU-P42024				16 mm (5/8 in)	4					
BLU-P42025				38 mm (1 1/2 in)	5					
BLU-P42027				100 mm (4 in)	7					
BLU-P42029				150 mm (6 in)	9					
BLU-H62900			HARRIS 6290	16 mm (5/8 in)	0					
BLU-H62901				25 mm (1 in)	1					
BLU-H62902				50 mm (2 in)	2					
BLU-H62903				75 mm (3 in)	3					
BLU-H62904				150 mm (6 in)	4					

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## FLAMAL 29 / PROPYLENE TIPS

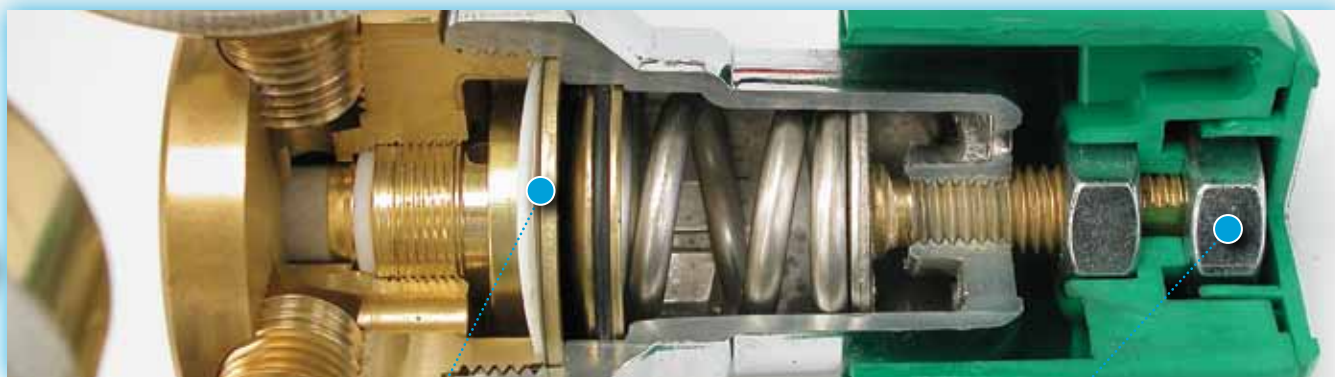
ITEM NUMBER	APPLICATION		PREHEAT	STYLE	MATERIAL THICKNESS	SIZE
BLU-VGPP000	Two-piece, medium preheat, for general hand or machine torch cutting.			VICTOR GPP	3 mm (1/8 in)	000
BLU-VGPP00					6 mm (1/4 in)	00
BLU-VGPP0					13 mm (1/2 in)	0
BLU-VGPP1					19 mm (3/4 in)	1
BLU-VGPP2					38 mm (1 1/2 in)	2
BLU-VGPP3					64 mm (2 1/2 in)	3
BLU-VGPP4	One-piece, medium preheat tip, for general hand cutting.			VICTOR 3-GPP	75 mm (3 in)	4
BLU-VGPP5					125 mm (5 in)	5
BLU-VGPP6					200 mm (8 in)	6
BLU-V3GPP000					3 mm (1/8 in)	000
BLU-V3GPP00					6 mm (1/4 in)	00
BLU-V3GPP0					13 mm (1/2 in)	0
BLU-V3GPP1	Two-piece, medium preheat tip, for general hand or machine cutting.			HARRIS 6290-NXP	19 mm (3/4 in)	1
BLU-V3GPP2					38 mm (1 1/2 in)	2
BLU-V3GPP3					64 mm (2 1/2 in)	3
BLU-H6290NXP00					10 mm (3/8 in)	
BLU-H6290NXP0					16 mm (5/8 in)	0
BLU-H6290NXP1					25 mm (1 in)	1
BLU-H6290NXP2					50 mm (2 in)	2
BLU-H6290NXP3					75 mm (3 in)	3
BLU-H6290NXP4					150 mm (6 in)	4

## PROPANE / NATURAL GAS TIPS

ITEM NUMBER	APPLICATION		PREHEAT	STYLE	MATERIAL THICKNESS	SIZE
BLU-VGPN00	Two-piece, medium preheat, for general hand or machine torch cutting.			VICTOR GPN	6 mm (1/4 in)	00
BLU-VGPN0					13 mm (1/2 in)	0
BLU-VGPN1					19 mm (3/4 in)	1
BLU-VGPN2					38 mm (1 1/2 in)	2
BLU-VGPN3					64 mm (2 1/2 in)	3
BLU-VGPN4					75 mm (3 in)	4
BLU-VGPN5					125 mm (5 in)	5

# KEY FEATURES ARE THE BLUESHIELD ADVANTAGE

GAS APPARATUS



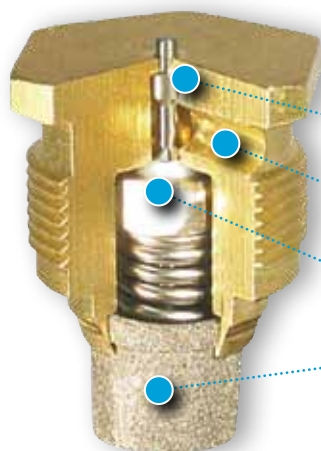
## STAINLESS STEEL DIAPHRAGM

- + Accurate, long lasting service
- + Retains properties in cold temperatures and harsh environments
- + Less fragile than neoprene® in cold weather

## CAPTIVE ADJUSTING KNOB

- + Colour coded for gas service
- + Dual lock nuts allow tamper-proof setting, or pre-adjustment of maximum delivery pressure

# CAPSULE SEAT ASSEMBLY



## SINGLE MODULAR COMPONENT FOR EASY MAINTENANCE

- Positive seat stop eliminates seat deformation under repetitive, high-cycle use
- Lateral flow passages reduce the effects of gas surge on the diaphragm, preventing "hum"
- High density PTFE Teflon® or PCTFE Kel-F® seat retains sealing properties over a wide temperature range
- Large surface area 40 micron bronze filter captures debris and prevents seat failure, allowing maximum flow performance over a long service life

REGULATOR MODEL: **BLU-xxx###xx###** 48

## 1 CGA INLET CONNECTION\*

## 2 INLET PRESSURE

- 2 LPR: 400 psi max. TSR: two-stage
- HPR: 3000 psi max. PSR: pipeline station
- 3 XPR: 5500 psi max.

OR

## REGULATOR DELIVERY TYPE

- A: max. delivery pressure 15 psi FG: flowgauge type
- B: max. delivery pressure 40 psi FM: flowmeter type
- 4 C: max. delivery pressure 100 psi FM2: dual flowmeter type
- D: max. delivery pressure 300 psi
- E: max. delivery pressure 500 psi

**\*CAUTION:** DO NOT modify or change regulator inlet connections to install regulators on containers that are filled with a different gas or are pressurized to a higher internal pressure than the maximum inlet pressure listed.

BLUESHIELD™ Single-Stage Cylinder Regulators

# 104 / 114 SERIES

HEAVY DUTY

BLU-HPR104C540

BLU-LPR114A410

## DESIGN FEATURES

### Capsule Seat Assembly

- + PTFE Teflon® seat
- + 4.8 mm orifice for high flow capacity
- + 40 micron bronze filter protects seat from contamination, minimizes failures, and simplifies maintenance

### Forged Brass Body and Chrome Plated Bonnet

- + Rugged body construction
- + Reduced weight due to bonnet material

### Stainless Steel Diaphragm

- + 64 mm (2.5") diameter convoluted diaphragm
- + High leak integrity
- + Sensitive over wide temperature range

### 64 mm (2.5") brass case gauges

- + Excellent readability
- + Colour coded for safety
- + Dual scales in kPa and psi

### Self-reseating relief valve on oxygen model \*

- + Vents excess pressure and re-seals

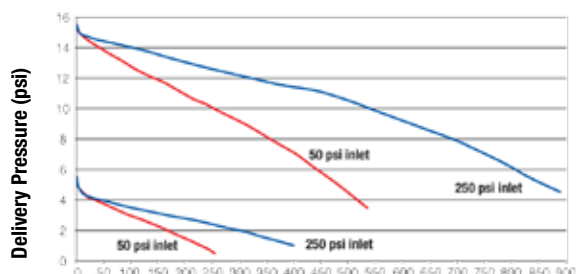
### Captive adjusting knob

- + Colour coded for gas service

ITEM NUMBER	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
		LOW PRESSURE		HIGH PRESSURE							
		KPA	PSIG	KPA	PSIG	KPA	PSIG	KPA	PSIG	INLET	OUTLET
BLU-LPR114A410	Acetylene	200	30	2800	400	2755	400	100	15	410	023
BLU-LPR114A510	Acetylene	200	30	2800	400	2755	400	100	15	510	023
BLU-HPR104C540	Oxygen	1400	200	28000	4000	20685	3000	830	120	540	022

## LPR114 Series

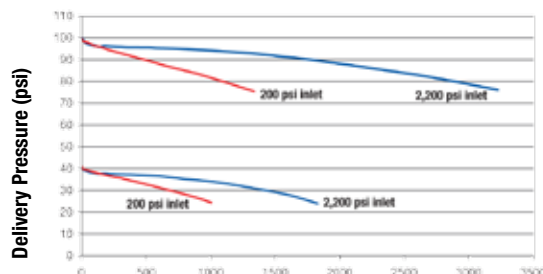
Flow Regulation Curves



Flow Rate (CFH N<sub>2</sub>)

## HPR104 Series

Flow Regulation Curves



Flow Rate (CFH N<sub>2</sub>)

\* CAUTION: Relief valves are not intended to protect downstream apparatus. Provide a separate, flow-rated relief device if downstream system cannot support full cylinder pressure.

## BLUESHIELD™ Single-Stage Cylinder Regulators

### 56 SERIES



BLU-HPR56C580



BLU-HPR56C540



BLU-XPR56FM2680

GAS  
APPARATUS

#### DESIGN FEATURES

##### Capsule Seat Assembly

- + PTFE Teflon® seat on LPR and HPR models
- + PCTFE Kel-F® seat on XPR models
- + 3.2 mm orifice for excellent flow capacity
- + 40 micron bronze filter protects seat from contamination, minimizes failures, and simplifies maintenance

##### Bar Stock Brass Body and Chrome Plated Bonnet

- + Solid body construction
- + Reduced weight due to bonnet material

##### Stainless Steel Diaphragm

- + 45 mm (1.75") diameter convoluted diaphragm
- + High leak integrity
- + Sensitive over wide temperature range

##### 51 mm (2") brass case gauges

- + Good readability
- + Oxygen and Acetylene models colour coded for safety
- + Dual scales in kPa and psi

##### Self-reseating relief valve on HPR and XPR models \*

- + Vents excess pressure and re-seals

##### Captive adjusting knob

- + Colour coded for gas service

ITEM NUMBER	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
		LOW PRESSURE		HIGH PRESSURE							
		KPA	PSIG	KPA	PSIG	KPA	PSIG	KPA	PSIG	INLET	OUTLET
BLU-LPR56A410	Acetylene	200	30	2800	400	2755	400	100	15	410	023
BLU-LPR56A510	Acetylene	200	30	2800	400	2755	400	100	15	510	023
BLU-HPR56C320	Carbon Dioxide	1400	200	28000	4000	20685	3000	690	100	320 <sup>1</sup>	032
BLU-HPR56C346	Compressed Air	1400	200	28000	4000	20685	3000	690	100	346	033
BLU-HPR56B350	Hydrogen	700	100	28000	4000	20685	3000	345	50	350	023
BLU-HPR56C540	Oxygen	1400	200	28000	4000	20685	3000	690	100	540	022
BLU-HPR56B580	Inert Gases	700	100	28000	4000	20685	3000	345	50	580	032
BLU-HPR56C580	Inert Gases	1400	200	28000	4000	20685	3000	690	100	580	032
BLU-HPR56D580	Inert Gases	2800	400	28000	4000	20685	3000	2100	300	580	1/4" SAE Flare
BLU-HPR56E580	Nitrogen	7000	1000	28000	4000	20685	3000	3450	500	580	1/4" SAE Flare
BLU-XPR56C680	Inert Gases	1400	200	40000	6000	37920	5500	690	100	680	032
BLU-XPR56D680	Inert Gases	2800	400	40000	6000	37920	5500	2100	300	680	1/4" SAE Flare
BLU-XPR56E680	Nitrogen	7000	1000	40000	6000	37920	5500	3450	500	680	1/4" SAE Flare
BLU-XPR56FG680	Inert Gases	7000	1000	40000	6000	37920	5500	N/A	N/A	680	032
BLU-XPR56FM680	Inert Gases	7000	1000	40000	6000	37920	5500	N/A	N/A	680	032
BLU-XPR56FM2680	Inert Gases	7000	1000	40000	6000	37920	5500	N/A	N/A	680	032

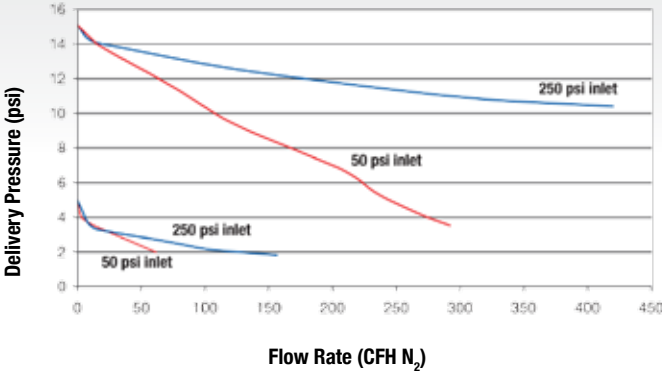
<sup>1</sup> CGA 320 connection requires a sealing washer to effect a leak-tight joint.

\* CAUTION: Relief valves are not intended to protect downstream apparatus. Provide separate, flow-rated relief device if downstream system cannot support full cylinder pressure.

BLUESHIELD™ Single-Stage Cylinder Regulators

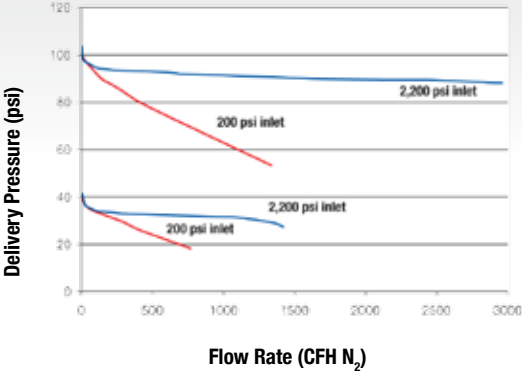
LPR56 Series

Flow Regulation Curves



HPR56 Series

Flow Regulation Curves



FLAMAL 29  
& LP-GASES  
HEAVY-DUTY

DESIGN FEATURES

Capsule Seat Assembly

- + PTFE Teflon® seat
- + 4.8 mm orifice for high flow capacity
- + 40 micron bronze filter protects seat from contamination, minimizes failures, and simplifies maintenance

64 mm (2.5") brass case gauge

- + Excellent readability
- + Dual scales in kPa and psi

Forged Brass Body and Chrome Plated Bonnet

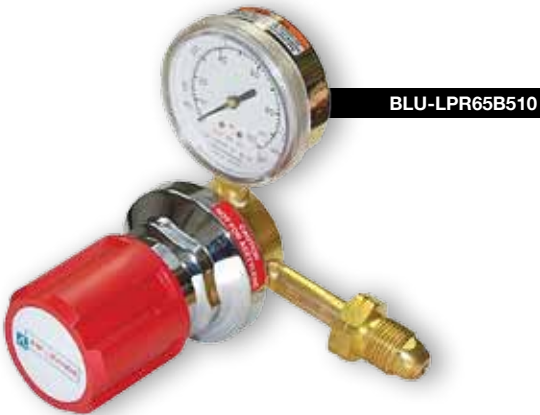
- + Rugged body construction
- + Reduced weight due to bonnet material

Captive adjusting knob

- + Colour coded red for fuel gas service

Neoprene® Rubber Diaphragm

- + 64 mm (2.5") diameter diaphragm
- + Superior flexibility for sensitive pressure control



ITEM NUMBER	GAS SERVICE	GAUGES SCALES		MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
		HIGH PRESSURE							
		KPA	PSIG	KPA	PSIG	KPA	PSIG	INLET	OUTLET
BLU-LPR65B510	Flamal 29 and LP-Gases <sup>1</sup>	700	100	2800	400	413	60	510	023

<sup>1</sup> Propane, Propylene

\* CAUTION: Not for use with acetylene due to high delivery pressure capability



BLUESHIELD™ Two-Stage Cylinder Regulators

TSR SERIES  
HEAVY DUTY

These regulators reduce gas pressure in two steps, allowing a constant delivery pressure to be maintained, regardless of the remaining cylinder pressure<sup>1</sup>. This feature makes two-stage regulators well suited to applications where accuracy and consistency are a must. All two stage models feature modular seat assembly capsules in both stages to allow for quick and simple maintenance and repair.

DESIGN FEATURES

- + 65 mm (2.5") pressure gauges
- + 40 micron bronze filters protect seats from foreign material
- + Sensitive rubber diaphragms
- + Captive adjusting knobs
- + Self-seating relief valves \*  
(except on acetylene models)

GAS  
APPARATUS

BLU-TSR65C540



BLU-TSR65C580



ITEM NUMBER	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
		LOW PRESSURE		HIGH PRESSURE							
		KPA	PSIG	KPA	PSIG	KPA	PSIG	KPA	PSIG	INLET	OUTLET
BLU-TSR65C540	Oxygen	1400	200	28000	4000	20685	3000	930	135	540	022
BLU-TSR65A410	Acetylene	200	30	2800	400	2755	400	100	15	410	023
BLU-TSR65A510	Acetylene	200	30	2800	400	2755	400	100	15	510	023
BLU-TSR65C350	Hydrogen	1400	200	28000	4000	20685	3000	930	135	350	023
BLU-TSR65C580	Inert Gases	1400	200	28000	4000	20685	3000	930	135	580	032
BLU-TSR65C346	Compressed Air	1400	200	28000	4000	20685	3000	930	135	346	033
BLU-TSR65C590	Compressed Air	1400	200	28000	4000	20685	3000	930	135	590	033
BLU-TSR65C320	Carbon Dioxide	1400	200	28000	4000	20685	3000	930	135	320 <sup>2</sup>	032

<sup>1</sup> Within certain limits.

<sup>2</sup> CGA 320 connection requires a sealing washer to effect a leak-tight joint.

\* CAUTION: Relief valves are not intended to protect downstream apparatus. Provide a separate, flow-rated relief device if downstream system cannot support full cylinder pressure.

## BLUESHIELD™ Single-Stage Flowgauge | Flowmeter Regulators and Hose Kits

# 48 SERIES

## MEDIUM-DUTY

Choice of flowgauge or flowmeter model regulators for GMAW/GTAW/FCAW shielding gas applications. Available as individual units or in kits that include 2.4 m (8 ft) of gas hose.

### DESIGN FEATURES

- + 51 mm (2") pressure gauges
- + Sensitive rubber diaphragms
- + Self-reseating relief valves\*
- + Solid, bar-stock brass bodies
- + Chrome plated bonnets



GAS  
APPARATUS

ITEM NUMBER	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		FLOW RANGE @ 21°C (70°F)		CGA CONNECTIONS	
		LOW PRESSURE		HIGH PRESSURE							
		KPA	PSIG	KPA	PSIG	KPA	PSIG	L/MIN	SCFH	INLET	OUTLET
BLU-HPR48FG320	Carbon Dioxide	Flowgauge	Flowgauge	28000	4000	20685	3000	9-24	20-50	320 <sup>2</sup>	032 <sup>3</sup>
BLU-HPR48FG580	Argon	Flowgauge	Flowgauge	28000	4000	20685	3000	9-28	20-60	580	032 <sup>3</sup>
BLU-HPR48FM320	Carbon Dioxide	Flowmeter	Flowmeter	28000	4000	20685	3000	0.5-26	10-55	320 <sup>2</sup>	032
BLU-HPR48FM580ARHE	Argon / Helium	Flowmeter	Flowmeter	28000	4000	20685	3000	0.5-28 Ar 14-94 He	10-60 Ar 30-200 He	580	032
BLU-FG320KIT <sup>1</sup>	Carbon Dioxide	Flowgauge	Flowgauge	28000	4000	20685	3000	9-24	20-50	320 <sup>2</sup>	032 <sup>3</sup>
BLU-FG580KIT <sup>1</sup>	Argon	Flowgauge	Flowgauge	28000	4000	20685	3000	9-28	2060	580	032 <sup>3</sup>
BLU-FM320KIT <sup>1</sup>	Carbon Dioxide	Flowmeter	Flowmeter	28000	4000	20685	3000	0.5-26	20-50	320 <sup>2</sup>	032
BLU-FM580KIT <sup>1</sup>	Argon / Helium	Flowmeter	Flowmeter	28000	4000	20685	3000	0.5-28 Ar 14-94 He	10-60 Ar 30-200 He	580	032

<sup>1</sup> Kits include 2.4 m (8 ft) of 4.8 mm (3/16") dia. inert gas hose.

<sup>2</sup> CGA connection 320 requires a sealing washer to effect a leak-tight joint.

<sup>3</sup> Do not remove outlet connection or replace with one of different orifice diameter. Calibration of flowgauge scale requires specific metering orifice diameter.

\* **CAUTION:** Relief valves are not intended to protect downstream apparatus. Provide a separate, flow-rated relief device if downstream system cannot support full cylinder pressure.

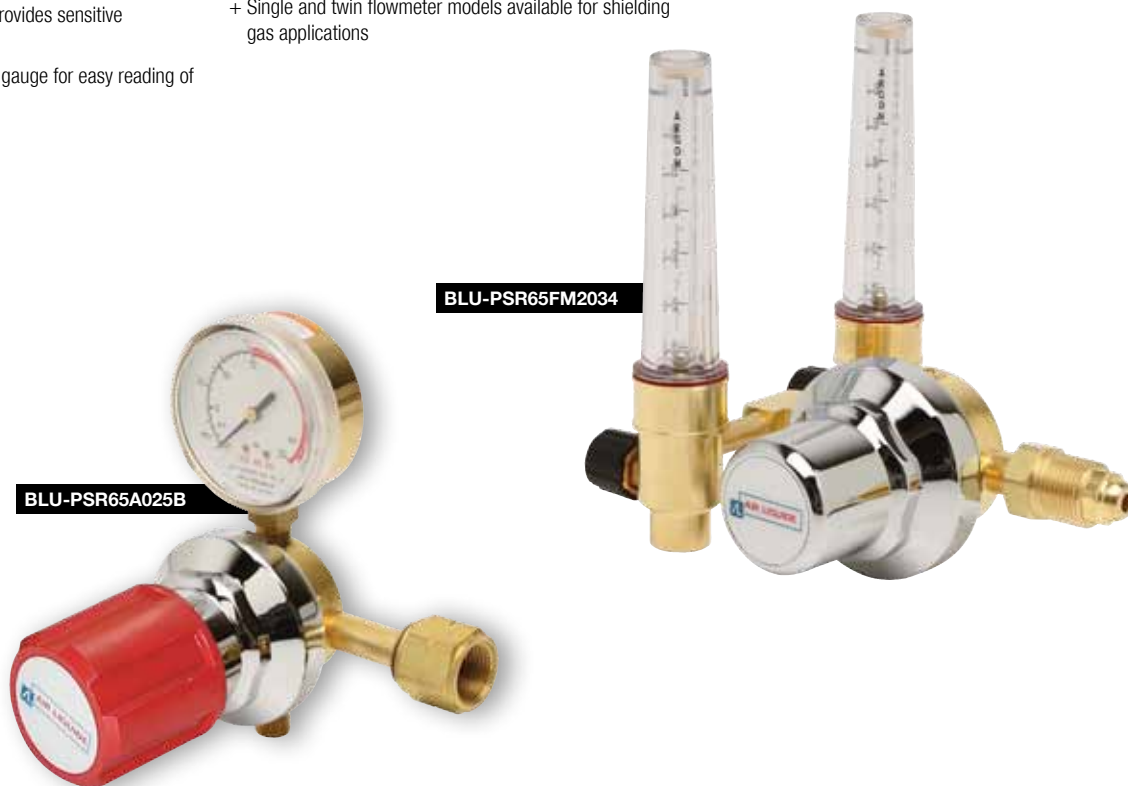
## BLUESHIELD™ Pipeline Station Regulators

# PSR SERIES

## HEAVY DUTY

## DESIGN FEATURES

- + Capsule seat assembly
- + 4.8 mm seat diameter for high flow capacity
- + 40 micron bronze filter protects seat from foreign material
- + Large-area rubber diaphragm provides sensitive adjustment
- + 64 mm (2.5") delivery pressure gauge for easy reading of pressure setting
- + Rugged, forged brass body and chrome plated bonnet for long service life
- + Captive adjusting knob
- + Single and twin flowmeter models available for shielding gas applications

GAS  
APPARATUS

ITEM NUMBER	GAS SERVICE	GAUGE SCALES		MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
		KPA	PSIG	KPA	PSIG	KPA	PSIG	INLET	OUTLET
BLU-PSR65C024B	Oxygen	1400	200	1380	200	930	135	024	022
BLU-PSR65C024C	Oxygen	1400	200	1380	200	930	135	024	024
BLU-PSR65A025B	Acetylene	200	30	100	15	100	15	025	023
BLU-PSR65A025C	Acetylene	200	30	100	15	100	15	025	025
BLU-PSR65B025	Fuel Gases <sup>1</sup>	700	100	1380	200	480	70	025	023
BLU-PSR65C034	Inert Gases <sup>2</sup>	1400	200	1380	200	930	135	034	032
BLU-PSR65FM034	Argon / CO <sub>2</sub> Flowmeter	N/A	N/A	1380	200	28 Ar / 26 CO <sub>2</sub> (L / min)	60 Ar / 55 CO <sub>2</sub> (scfh)	034	032
BLU-PSR65FM2034	Argon / CO <sub>2</sub> Twin Flowmeter	N/A	N/A	1380	200	28 Ar / 26 CO <sub>2</sub> (L / min)	60 Ar / 55 CO <sub>2</sub> (scfh)	034	032

<sup>1</sup> FLAMAL 29, Propane, Natural Gas, Propylene, Hydrogen

<sup>2</sup> Argon, Nitrogen, Helium, Carbon Dioxide, Compressed Air

## Replacement Flowmeters and Pressure gauges



**Replacement  
Flowmeter Assemblies**

+ BLU-01511789



**Replacement Pressure Gauges**



**Replacement 2" Gauge Lens**

+ BLU-01601014



**Protective Rubber Cover for  
Shock Resistance**

+ UNW-GB20S

**GAS  
APPARATUS**

ITEM NUMBER	DESCRIPTION	INLET X OUTLET CONFIGURATION	CALIBRATION PRESSURE
<b>BLU-01511789</b>	Ar (10-70 cfh) / CO <sub>2</sub> (10-70 cfh) flowmeter ass'y	1/4" NPT-M (rear inlet) x CGA 032-F (RH)	50 psig
<b>WES-AW432B</b>	Outlet hose adapter	9/16"-18 RH-F (CGA 022) x 5/8"-18 RH-F (CGA 032)	N/A
<b>SUP-B206</b>	Pipe thread reducer bushing	1/4" NPT-M x 1/8" NPT-M	N/A
<b>CON-8010712</b>	CO <sub>2</sub> (10-55 cfh) flowmeter ass'y	1/8" NPT-F (right side inlet) x CGA 032-F (RH)	75 psig
<b>CON-8010711</b>	Ar (10-60 cfh) / He (30-200 cfh) flowmeter ass'y	1/8" NPT-F (right side inlet) x CGA 032-F (RH)	30 psig
<b>CON-801150641</b>	Ar (10-60 cfh) / He (30-200 cfh) flowmeter ass'y	1/8" NPT-F (left side inlet) x CGA 032-F (RH)	30 psig
<b>CON-8010710</b>	Ar (10-70 cfh) / CO <sub>2</sub> (10-55 cfh) flowmeter ass'y	1/8" NPT-F (right side inlet) x CGA 032-F (RH)	30 psig

PRESSURE RANGE	DIAL TYPE	BOTTOM MOUNT (25 IN)	BOTTOM MOUNT (2 IN)	MATCHING OUTLET ORIFICE BUSHING
200kPa / 30psi	AL – Red – Acetylene	<b>CON-1100102AL *</b>	<b>BLU-01100101 *</b>	
700kPa / 100psi	Standard		<b>BLU-01100308 *</b>	
1400kPa / 200psi	AL – Green – Oxygen	<b>CON-1100503AL *</b>	<b>BLU-01100501 *</b>	
1400kPa / 200psi	Standard		<b>BLU-01100502 *</b>	
2800kPa / 400psi	AL – Red – Acetylene	<b>CON-1100802AL *</b>	<b>BLU-01100801 *</b>	
2800kPa / 4000psi	AL – Green – Oxygen	<b>CON-1101603AL *</b>	<b>BLU-01101601 *</b>	
28000kPa / 4000psi	Standard		<b>BLU-01101602</b> <b>CON-8410218 **</b>	
42000kPa / 6000psi	Standard		<b>BLU-01101701 *</b>	
Argon flowgauge	AL – Black – Argon		<b>BLU-01100521 ***</b>	CON-8304312 (.025")
Argon flowgauge	Standard – Argon		<b>CON-8414438 **</b>	CON-8304314 (.032")
CO <sub>2</sub> flowgauge	AL – Black – CO <sub>2</sub>		<b>BLU-01100519 ***</b>	BLU-01511396 (.0225")
CO <sub>2</sub> flowgauge	Standard – CO <sub>2</sub>		<b>CON-8414437 **</b>	CON-8304312 (.025")

\* Brass case

\*\* Steel case, chrome plated

\*\*\*Steel case, painted brass colour

Orifice Meters

FLOW METERING ORIFICE BUSHINGS



CON-8301978

FEATURIES

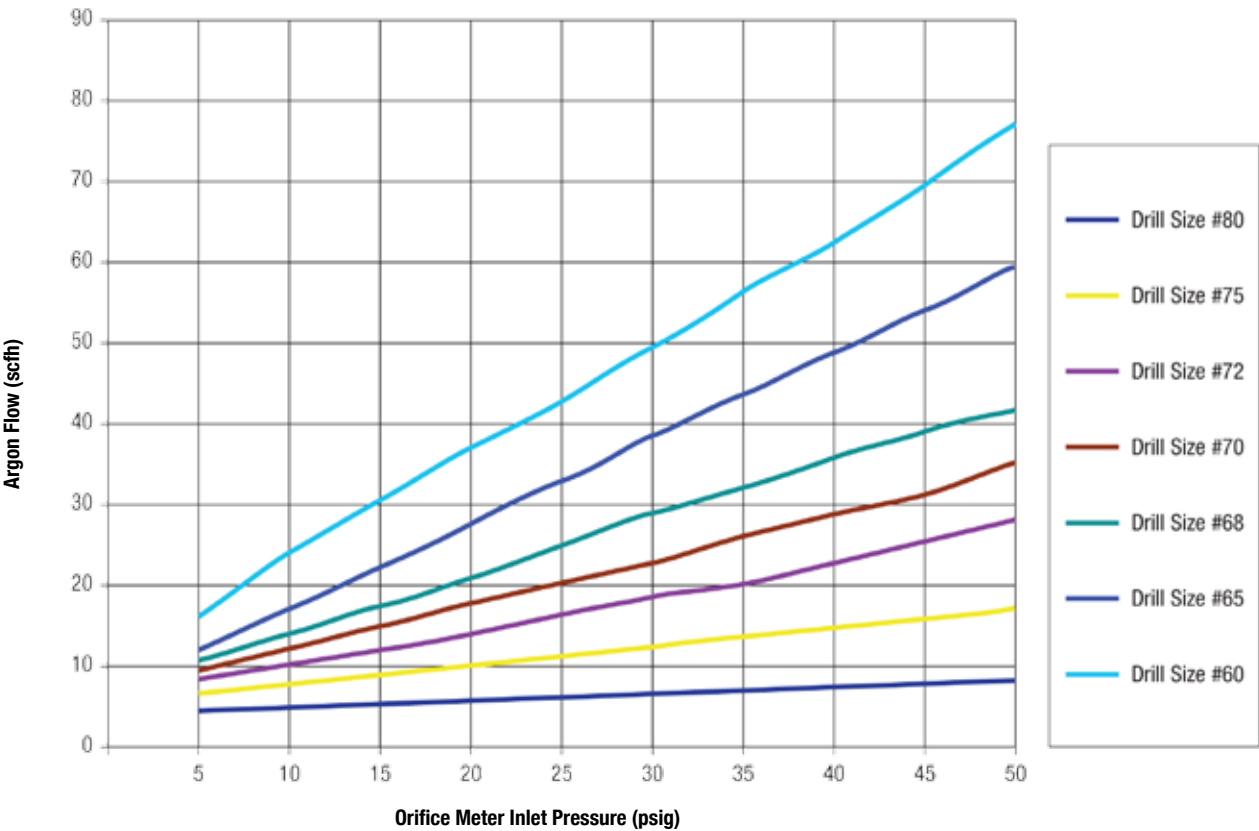
Many production jobs call for an unvarying flow of shielding gas day after day. Use of the proper orifice bushing to accurately meter the gas is the economical answer to this situation.

+ When a change of gas flow is required, simply replace the orifice meter with one that suits the new condition.

ITEM NUMBER	ORIFICE DIAMETER		ORIFICES
	MM	IN	DRILL SIZE
CON-8301978	0,34	0,0135	#80
CON-8301973	0,64	0,025	#72
CON-8301985	0,71	0,028	#70
CON-8301974	0,79	0,031	#68
CON-8301976	1,02	0,04	#60

Orifice Meter Calibration Curves

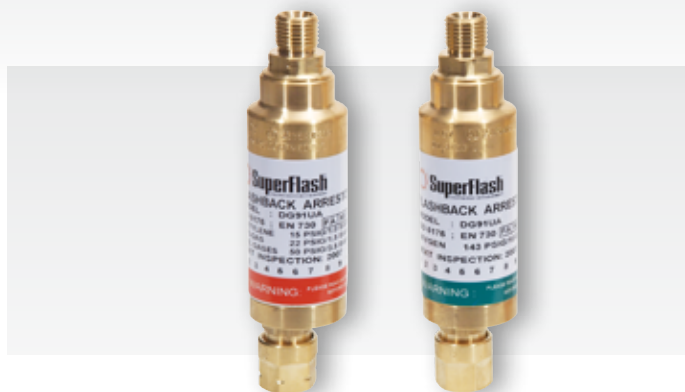
for CO<sup>2</sup> multiply flow value by 0.95





## Safety Devices for Oxy-Fuel Gas Systems

## TORCH INLET MODELS

**MODEL DG91UA**

Heavy-duty model for high flow applications.

**MODEL GG**

General purpose model for medium-duty applications.

GAS  
APPARATUS

**Description**

- + Combination reverse-flow check valve and flashback arrestor
- + Attach to the inlet connections of torches
- + For use in conformance with CSA W117.2, Safety in Welding, Cutting, and Allied Processes

**Features**

- + Torch-mounted location ensures maximum protection for operator from hazards of flashback
- + Reusable after a flashback occurs.<sup>1</sup>
- + Conform to ISO 5175 Class I (Heavy Class)<sup>2</sup>
- + UL Listed

**Functions**

- + Reverse-flow check valve reduces the possibility of mixed gases in hose due to improper pressure adjustment, dirty or plugged tips, or leaking torch valves.
- + Sintered stainless steel flame barrier effectively stops flashback flame and prevents explosions in hose
- + 100 micron inlet filter helps keep out dirt that could hinder safe operation

**SPECIFICATIONS**

ITEM NUMBER	MODEL	GAS SERVICE	WEIGHT		LENGTH		MAXIMUM PRESSURE		AIR FLOW (TYPICAL)				CGA CONNECTION
			G	ON	MM	IN	KPA	PSIG	KPA	PSIG	L/MIN	SCFH	
<b>IBE-61622602070</b>	GG Twin-Pack GG Fuel GG Oxy	Oxygen + Fuel Fuel Gases <sup>3</sup> Oxygen	111	3.9	59	2.3							
<b>IBE-07012064</b>							345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	93	197	023 ('B' L-H)
<b>IBE-07012070</b>							986	143	500	72.5	438	929	022 ('B' R-H)
<b>IBE-07013021</b>	DG91UA Fuel DG91UA Oxy	Fuel Gases <sup>3</sup> Oxygen	349	12.3	127	5	345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	219	465	023 ('B' L-H)
<b>IBE-07013022</b>							986	143	500	72.5	912	1933	022 ('B' R-H)

<sup>1</sup> Subject to passing a safety leak test.

<sup>2</sup> International standard ISO 5175 – "Safety devices for fuel gases and oxygen or compressed air – General specifications, requirements and test."

<sup>3</sup> Acetylene hydrogen, natural gas, and LP gases (propylene, propane, butane, etc.)

<sup>4</sup> DO NOT use acetylene at pressures over 103 kPa (15 psig).

## Safety Devices for Oxy-Fuel Gas Systems

## REGULATOR OUTLET MODELS



## MODEL DG91N

Heavy-duty model for high flow applications.

## Description

- + Combination reverse-flow check valve and flashback arrestor with built-in thermal cut-off valve
- + Attach to the outlet connections of regulators
- + For use in conformance with CSA W117.2, Safety in Welding, Cutting, and Allied Processes

## Features

- + Regulator-mounted location protects the high-pressure components of the system and does not interfere with ease of torch manipulation
- + Reusable after a flashback occurs.<sup>1</sup>
- + Conform to ISO 5175 Class I (Heavy Class)<sup>2</sup>
- + UL Listed

## Functions

- + Check valve prevents reverse flow of a dangerous gas mixture from entering the regulator and cylinder
- + Sintered stainless steel flame barrier stops a flashback flame before it reaches the regulator and cylinder
- + Thermal cut-off valve closes permanently to stop dangerous gas flow when a fire or flashback heats the device above 165°C
- + 100 micron inlet filter helps keep out dirt that could hinder safe operation



## MODEL DGN

General purpose model for medium-duty applications.

## SPECIFICATIONS

ITEM NUMBER	MODEL	GAS SERVICE	WEIGHT		LENGTH		MAXIMUM PRESSURE		AIR FLOW (TYPICAL)				CGA CONNECTION
			G	ON	MM	IN	KPA	PSIG	KPA	PSIG	L/MIN	SCFH	
IBE-61622604099	DGN Twin-Pack DGN Fuel DGN Oxy	Oxygen + Fuel Fuel Gases <sup>3</sup> Oxygen	144	5.0	85	3.3							
IBE-07014123							345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	83	268	023 ('B' L-H)
IBE-07014128							986	143	500	72.5	387	1153	022 ('B' R-H)
IBE-07011123	DG91N Fuel DG91N Oxy	Fuel Gases <sup>3</sup> Oxygen	352	12.4	108	4.3	345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	219	465	023 ('B' L-H)
IBE-07011129							986	143	500	72.5	912	1933	022 ('B' R-H)

<sup>1</sup> Subject to passing a safety leak test. / <sup>2</sup> International standard ISO 5175 – "Safety devices for fuel gases and oxygen or compressed air – General specifications, requirements and test."

<sup>3</sup> Acetylene, hydrogen, natural gas, and LP gases (propylene, propane, butane, etc.) / <sup>4</sup> DO NOT use acetylene at pressures over 103 kPa (15 psig).

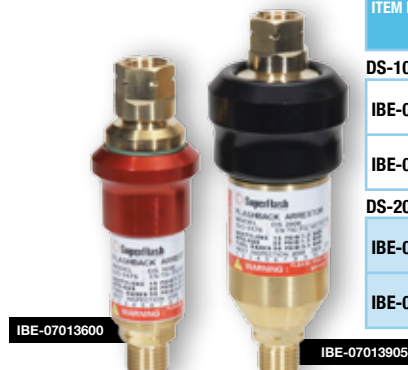
## REVERSE FLOW CHECK VALVES

ITEM NUMBER	GAS SERVICE	MODEL	CONNECTION	
			INLET	OUTLET
IBE-61622606630	1) Fuel (LH) and (1) Oxygen (RH)	Check Valve (B size torch)	0.56" UNF <sup>1</sup> M	0.56" UNF <sup>1</sup> F
IBE-61622606652	1) Fuel (LH) and (1) Oxygen (RH)	Check Valve (B size reg)	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> M

<sup>1</sup> CGA Class "B" Connection.

## RESETTABLE FLASHBACK ARRESTERS

Top of the line models **DS-1000** and **DS-2000** flashback arresters easily mount on most regulators or supply points and have a resettable pressure control valve that cuts off gas supply in the event of flashback or reverse gas flow. Resetting is easy – just pull up on the pressure control knob – no disassembly or special tools are required. The DS-2000 features high gas flow capacity, built in 100 micron inlet screen, reverse flow check valve, flame barrier and thermal cut off.



IBE-07013600

IBE-07013905

## QUICK CONNECTORS

ITEM NUMBER	GAS SERVICE	MODEL	CONNECTION	
			INLET	OUTLET
IBE-61622604992	(1) Fuel (LH) and (1) Oxygen (RH)	Twin-Pack DKG/D1	0.56" UNF <sup>1</sup> M	0.56" UNF <sup>1</sup> F
IBE-61622604993	(1) Fuel (LH) and (1) Oxygen (RH)	Twin-Pack DKD/D4	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> M

<sup>1</sup> CGA Class "B" Connection.

ITEM NUMBER	GAS SERVICE	CONNECTION		AIRFLOW TABLE	
		INLET	OUTLET	INLET PRESSURE PSIG	AIRFLOW FT <sup>3</sup> /H
DS-100					
IBE-07013600	Fuel Gas (LH)	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> F	7.3**	126
				14.5**	223
				21.8**	311
IBE-07013601	Oxygen (RH)			36.3**	491
				72.7**	1000
DS-200					
IBE-07013905	Fuel Gas (LH)	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> F	7.3**	231
				14.5**	465
				21.8**	725
IBE-07013907	Oxygen (RH)			36.3**	1041
				72.7**	1933

<sup>1</sup> CGA Class "B" Connection.

\*\* PSIG=pounds per square inch gauge

# WESTORCH

## HEAVY DUTY PROPANE TORCH

Pre-heating for welding, weed burning, asphalt repair, heating branding irons, etc. WET-80KIT10  
Constructed of the highest quality materials, the Model 80 is built to give many years of service. The head is constructed of cast iron, the valve, orifice and bushing are brass, and the manifold is 1/2" (12.7 mm) standard pipe.



WET-80KIT10

GAS  
APPARATUS

ITEM NUMBER	DESCRIPTION	INCLUDES
WET-80	Model 80 torch only	
WET-80KIT10	Model 80 torch and hose kit	Torch P.O.L. fittings and 10' (3 m) hose
WET-80REGKIT15	Model 80 torch and 15 ft. Hose and regulator kit	Torch, regulator, fitting and 15' (4.6 m) hose

# TURBOTORCH

## OUTFITS, TORCHES, TIPS AND REGULATORS



### AIR-ACETYLENE

ITEM NUMBER	DESCRIPTION	INCLUDES
TUR-03860832	Extreme™ Self Lighting Torch kit: Extreme Swirl Technology delivers high heat, super fast, reducing brazing time and fuel consumption.	AR-MC (CGA 200) Regulator, G-4 Handle, AH-12 Hose, PL-5A Tip, Soft solders to 1-1/2" (40 mm), Silver brazes to 3/4" (20 mm), "MC" Tank Connections, Instruction Manual
TUR-03860335	Extreme™ Standard Torch Kit: Reliable and well engineered, the standard line of kits combines the Extreme Swirl Technology with a traditional manual lighting torch.	AR-B (CGA 520) Regulator, G-4 Handle, AH-12 Hose, A-3 Tip, A-11 Tip, Soft solders to 3" (75 mm), Silver brazes to 1-5/8" (40 mm), "B" Tank Connection, Instruction Manual
TUR-03860089	Sof-Flame™ Torch Kit: This kit offers proven durability and performance for plumbing applications in harsh environments. Tips have a threaded connection and feature a removable orifice screw.	AR-MC (CGA 200) Regulator, WA-400 Handle, AH-12 Hose, S-4 Tip, Soft Solders to 1" (25 mm), "MC" Tank Connection, Instruction Manual



TUR-03860832



TUR-03860335



TUR-03860089

# TURBOTORCH

OUTFITS, TORCHES, TIPS AND REGULATORS (CONTINUED)



## MAP-PRO™ AND PROPANE

ITEM NUMBER	DESCRIPTION	INCLUDES
<b>TUR-03861293</b>	Extreme Self Lighting Torches. The TX-504 series is suitable for HVAC and high capacity applications. Featuring convenient self-lighting triggers, quick disconnect couplings between handle and tips.	TX504 hand torch, TUR-038600508 adapter, TS-12 hose, STK-R regulator
<b>TUR-03860851</b>	Featuring the new Extreme Swirl Technology. This torch has 360 degree swivel tips and easy to clean orifice screws.	STK-R Pressure Regulator with CGA-600 connection, ST-33 self lighting tip, Instruction manuals.
<b>TUR-03860403</b>	Featuring the new Extreme Swirl Technology. This torch has 360 degree swivel tips and easy to clean orifice screws.	STK-R Pressure Regulator with CGA-600 connection, ST-3 Tip, Instruction manual.
<b>TUR-03860837</b>	Proline Self Lighting Propane and MAP-PRO: Featuring Swirl Combustion Technology, this Proline kit is engineered for performance and durability.	RL-P Regulator, CGA-510, H-4 Handle, H-12 Hose, PL-3T Tip, Soft Solders 1" (25 mm), Silver Brazes 1/2" (12 mm), Instruction Manual.



**TUR-03861293**



**TUR-03860851**



**TUR-03860403**



**TUR-03860837**



## COMPLETE NITROGEN PURGE KIT

ITEM NUMBER	DESCRIPTION	INCLUDES
<b>TUR-03861370</b>	The TurboTorch® Nitrogen Purge Kit is designed with the professional in mind. This kit gives you the tools to pressure check HVAC and Refrigeration lines, flush drainage lines, blow clean components, and purge lines prior to brazing to protect the joints from oxidation.	TUR-03860814, nitrogen regulator, TUR-03861371, Turbo Tornado™, TUR-03761372, 1/2" (12.7 mm) cone plug, TUR-03861373, 3/4" (19 mm) cone plug, TUR-03861374, needle tip, TUR-03861375, CO <sub>2</sub> adapter, TUR-03861376, 36" (914 mm) x 1/4" (6.35 mm) standard charge hose, TUR-03861377, 72" (1.8 m) x 1/4" (6.35 mm) standard charge hose, TUR-03861378, blow gun

## GAS CYLINDER



**PROPANE**

**PROPYLENE**

**TUR-0916004C**

**TUR-09160112C**



## CONCOA Machine Cutting Torches and Liquid Cylinder Regulators

# 4700 SERIES CUTTING TORCH

## FEATURES

- + Stainless steel ball valves assure positive seating and control
- + Stainless steel torch heads provide better tip seating, longer life
- + Spring loaded lift type cutting oxygen valve allows fast on-off
- + 32 pitch rack and 1 3/8" diameter barrel

ITEM NUMBER	OVERALL TORCH		MAX. REACH (BOTTOM TO TIP END)		EFFECTIVE RACKING LENGTH			HOSE "B" SIZE	BARREL IN	RACK	VALVE
	IN	CM	IN	CM	IN	CM	LB				
CON-8234700	14.25	36.2	8.25	20.96	5	12.702	4	2	1 3/8	yes	Yes
CON-8234701	19.25	48.902	13.25	33.66	10	25.404	4.13	2	1 3/8	yes	Yes
CON-8234702	13.75	34.931	8.3	21	5	12.702	4.2	3	1 3/8	yes	Yes
CON-8234708	8	20.32	4.5	11.4	2.5	6.35	3.75	3	1 3/8	no	Yes
CON-8234781	19.25	48.902	19.3	48.9	10	25.404	4.5	3	1 3/8	yes	Yes
CON-8234783	25.125	63.826	19.3	48.9	16	40.646	6.13	3	1 3/8	yes	Yes

GAS APPARATUS

# 6530 SERIES LIQUID CYLINDER REGULATOR

MEDIUM-HEAVY DUTY WELDING, HEATING AND CUTTING

## FEATURES

- + 2.5" (63mm) 316L Stainless Diaphragm
  - Cold Climate Performance
- + Self Seating Relief Valve
  - Protects against liquid flash
- + Capsule® Seat Assembly
  - High cycle life

## MATERIAL

- + Forged Brass Body
- + PTFE Seat
- + 20-35 Micron Bronze Capsule® Filter



CON-8066530

## Specifications

- + 250 PSI Max Inlet
- + Temperature Range -40° to 140° F (-40° to 60° C)

ITEM NUMBER	GAS SERVICE	INLET CGA	DELIVERY RANGE	CONNECTION	PRESSURE GAUGE
				OUTLET	
CON-8066530	Oxygen	540	0-200 PSIG	9/16"-18"B" RH Ext.	400 PSIG
CON-8066535	Argon, Nitrogen, Helium	580	0-120 PSIG	5/8"-18 "B" RH Int.	200 PSIG
CON-8066531	CO <sub>2</sub>	320	0-120 PSIG	5/8"-18 "B" RH Int.	200 PSIG



## CONCOA Manifold and Line Regulators

## 6700 SERIES

### HIGH FLOW MANIFOLD REGULATORS

#### FEATURES

- + ISOFLOW Technology: constant delivery pressure regardless of inlet pressure fluctuations
- + 1/2" Inlet and Outlet Ports: High flow capacity
- + Machined Brass Barstock Body: Multiple configurations possible
- + Pressure Ranges 0-15 to 0-200 PSIG: Broad range of applications

#### Specifications

- + Max Inlet Pressure 3000 PSIG (210 BAR)
- + Temperature Range -40 to 140°F (-40 to 60°C)
- + Gauges 2 1/2" diameter brass
- + Spring loaded relief valve
- + Ports 1/2" FPT (inlet and outlet)
- + 1/4" FPT (gauge and relief ports)
- + Weight 5.9 lbs (2.7 kg)



CON-8066700

ITEM NUMBER	DELIVERY PRESSURE	INLET GAUGE	OUTLET GAUGE	INLET POSITION
CON-8066700	0-15 PSIG (Red Line)	0-400 PSIG	0-30 PSIG	Right Hand
CON-8066725	0-125 PSIG	0-4000 PSIG	0-200 PSIG	Right Hand
CON-8066740	0-40 PSIG	0-400 PSIG	0-60 PSIG	Right Hand
CON-8066745	0-200 PSIG	0-4000 PSIG	0-400 PSIG	Right Hand

## 6790 SERIES

### HIGH FLOW LINE REGULATORS

#### FEATURES

- + 1/2" Seat and Ports
  - Ultra high flow
- + Balanced Stem Seat
  - Steady control with decaying inlet
- + Heavy Forged Brass Bonnet
  - High Durability

#### MATERIAL

- + Heavy Barstock Brass Body
- + Viton® or Neoprene® Seat
- + 40 Micron Stainless Dome Inlet Filter

#### Specifications

- + 3,000 PSI Max Inlet\*
- + Temperature Range -40° to 140°F (-40° to 60°C)

\* Excluding 806-6790 and 806-6792 models which have 400 PSI Max Inlet.

ITEM NUMBER	DELIVERY PRESSURE	MAX. FLOW	OUTLET GAUGE
CON-8066790 (Acetylene Only)	0-15 PSIG	900 scfh	0-30 PSIG (Redline Gauge)
CON-8066792 (400 PSI Inlet)	0-40 PSIG	1500 scfh	0-60 PSIG
CON-8066793	0-125 PSIG	900 scfh	0-200 PSIG
CON-8066794	0-200 PSIG	900 scfh	0-400 PSIG

## CONCOA High Pressure Regulators and Station Drop Kits

# 1400 SERIES

## HIGH PRESSURE PISTON REGULATORS ULTRA HIGH PRESSURE DELIVERY

### FEATURES

- + Positive Seat Stop
- + High cycle life
- + Installation flexibility
- + PTFE Piston O-Ring Seals
- + Accurate pressure control

### MATERIAL

- + Brass Bar Stock Body
- + PTFE, Arlon and PCTFE Seats\*
- + 25 Micron Bronze Capsule® Filter

\* seat material depends on model's PSI range



CON-8061436011

GAS  
APPARATUS

### Specifications

+ 3000/5500/6000 PSI Max Inlets + Temperature Range -40° to 140°F (-40° to 60°C)

ITEM NUMBER	GAS SERVICE	DELIVERY PRESSURE GAUGE	MAX INLET PRESSURE/GAUGE INLET	INLET
CON-8061413011	Oxygen	0-750 PSIG/1500 PSIG	3000 PSIG/4000 PSIG	CGA 540
CON-8061436011	Oxygen	0-2500 PSIG/4000 PSIG	3000 PSIG/4000 PSIG	CGA 540
CON-8061414011	Inerts	0-750 PSIG/1500 PSIG	3000 PSIG/4000 PSIG	CGA 580
CON-8061415011	Inerts	0-1500 PSIG/4000 PSIG	3000 PSIG/4000 PSIG	CGA 580
CON-8061424011	Inerts	0-750 PSIG/1500 PSIG	5500 PSIG/6000 PSIG	CGA 680
CON-8061425011	Inerts	0-1500 PSIG/4000 PSIG	5500 PSIG/6000 PSIG	CGA 680
CON-8061435011	Inerts	0-2500 PSIG/4000 PSIG	3000 PSIG/4000 PSIG	CGA 580
CON-8061445011	Inerts	0-4500 PSIG/6000 PSIG	5500 PSIG/6000 PSIG	CGA 680
CON-8061455011	Inerts	0-2500 PSIG/4000 PSIG	5500 PSIG/6000 PSIG	CGA 680
CON-8061465011	Inerts	0-4500 PSIG/6000 PSIG	6000 PSIG/10000 PSIG	CGA 677
CON-8061418011	Air	0-1500 PSIG/4000 PSIG	3000 PSIG/4000 PSIG	CGA 346
CON-8061431011	Hydrogen or Methane	0-2500 PSIG/4000 PSIG	3000 PSIG/4000 PSIG	CGA 350

# STATION DROP KITS

Station Drop Kits come completely assembled, ready to install out of the box with a regulator, flowmeter, or gas saver as a Point of Use option.

In addition, station drops include a high flow capacity, 200 PSIG maximum operating pressure in-line station valve.

ITEM NUMBER	GAS SERVICE	REGULATOR	INLET
CON-8016599	Fuel Gases (FLAMAL 29, Propylene, Propane, Natural Gas)	"B" 9/16"-18 LH Ext.	1/2" FNPT
CON-8016596	Oxygen	"B" 9/16"-18 RH Ext.	1/2" FNPT
CON-8016595	Inert Gases	"B" 5/8" -18 RH Int.	1/2" FNPT
CON-8016592	Acetylene	"B" 9/16"-18 LH Ext.	1/2" FNPT





# ... yours to own!

## Available soon!\*

### **MORE ECONOMICAL**

- No rental fees
- Gas level shown at all times
- No regulators to buy or maintain

### **MORE GAS**

than in a standard size 9 exchange cylinder - **60% more!**

### **MORE PRESSURE**

- 3000 psig (20 000 kPa) vs 2250 psig (15 000 kPa) than a conventional cylinder
- Innovative high-strength steel cylinder that's as light as an aluminum cylinder

### **AS EASY AS 1-2-3**

1. Connect
2. Turn lever
3. Set gas flow or pressure

### **SAFER**

- Fully protected valve and regulator; no need to remove to transport

#### **ALBEE FLAME**



OXYGEN



ACETYLENE

#### **ALBEE WELD**



ARGON MIX



PURE ARGON

#### **ALBEE COOL**



NITROGEN

\* Available in some stores now, call us for more information on this NEW cylinder package.

# FILLER METALS



SMAW - Shielded-Metal Arc Welding

2

GMAW - Gas-Metal Arc Welding

8

MCAW - Metal-Cored Arc Welding

10

FCAW - Flux-Cored Arc Welding

13

Brazing

18

SAW - Submerged-Arc Welding

22

Aluminum

25

Stainless Steel

26



## SMAW - Shielded-Metal Arc Welding

# BLUESHIELD MILD-STEEL ELECTRODES

For companies looking to make their mark, Blueshield electrodes provide the best possible weld quality. We have a complete line of mild-steel, low-hydrogen and low-alloy electrodes available. Leader in the Canadian market, the Blueshield line meets high-quality standards.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
LA 6010	E6010	E4310	All (Vertical Down)	Cellulosic DC+	Forceful and penetrating arc for structural steel, pipe, boiler and pressure vessels.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-30971106
						3.2	1/8	4 x 5	4 x 11	BLU-30971108
						4.0	5/32			BLU-30971110
						5.0	3/16			BLU-30971112
LA ULTRA 11	E6011	E4311	All	Cellulosic AC/DC+	Maintenance and repair work on dirty or rusty material. Ship and farm repair.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-30970106
						3.2	1/8	4 x 5	4 x 11	BLU-30970108
						4.0	5/32			BLU-30970110
						5.0	3/16			BLU-30970112
LA 6013	E6013	E4313	All	Rutile AC/DC-/+	General purpose. Thinner gauge materials vertically down. Fast freezing, used to bridge gaps.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-30971306
						3.2	1/8	4 x 5	4 x 11	BLU-30971308
						4.0	5/32			BLU-30971310
						5.0	3/16			BLU-30971312
LA 7014	E7014	E4914	All	Rutile AC/DC-/+	General purpose, high-speed, iron powder electrodes. Ornamental iron sheet metal "farmer's rod".	2.5	3/32	4 x 2.5	4 x 5.5	BLU-30971406
						3.2	1/8	4 x 5	4 x 11	BLU-30971408
						4.0	5/32			BLU-30971410
						5.0	3/16			BLU-30971412
LA 7024	E7024	E4924	Flat and horizontal	Rutile AC/DC-	General-purpose, high-speed, heavily-coated iron powder electrodes. Storage tank. Sheet plate and structural-metal work.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-30972406
						3.2	1/8	4 x 5	4 x 11	BLU-30972408
						4.0	5/32			BLU-30972410
						4.0	5/32	4 x 4.5	4 x 10	BLU-30972411*
						5.0	3/16			BLU-30972412*
						6.0	1/4			BLU-30972416*

Mild-steel electrode length : 2.5 mm = 300 mm (12")  
 3.2 mm, 4.0 mm, 5.0 mm = 350 mm (14")  
 6.0 mm = 450 mm (18")

\* Electrode length = 450 mm (18")

Note: Blueshield electrodes may meet code requirements other than those listed.  
 Please consult a representative for a complete listing of the code requirements for our electrodes.





## SMAW - Shielded-Metal Arc Welding

# BLUESHIELD LOW-HYDROGEN ELECTRODES

Our high-quality products enable us to stake our claim as a market leader that delivers premium-grade electrodes. During welding and radiographic tests, the superior performance of Blueshield electrodes is outstanding and sets the benchmark in the Canadian industry.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
LA EXCELARC 18	E7018	E4918-H8	All	Basic AC/DC+	Extremely user-friendly general-purpose AC/DC low-hydrogen electrode. Can be used with low OCV AC welders.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-32972306
						3.2	1/8	4 x 5	4 x 11	BLU-32972308
						4.0	5/32			BLU-32972310
LA 7018	E7018-1	E4918-1-H4	All	Basic DC+/AC	LA 7018 is an industry standard Code quality 7018-1 with impact values down to -46°C (-50°F). Structural steels, boilers and pressure vessels.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-32971706
						3.2	1/8	4 x 5	4 x 11	BLU-32971708
						4.0	5/32			BLU-32971710
						5.0	3/16			BLU-32971711*
						6.0	1/4			BLU-32971712
LA 18 PLUS COMPLETE	E7018-1 H4R	E4918-1-H4	All	Basic DC+/AC Low moisture pickup	Premium Low Hydrogen all position electrode meets impact requirement -46°C	2.5 x 300	3/32 x 12	4 x 2.5	4 x 5.5	BLU-32971906
						2.5 x 350	3/32 x 14	4 x 4.5	4 x 9.9	BLU-32971907
						3.2 x 350	1/8 x 14	4 x 5	4 x 11	BLU-32971908
						3.2 x 450	1/8 x 18	4 x 4	4 x 8.8	BLU-32971909
						4.0 x 450	5/32 x 14	4 x 5	4 x 11	BLU-32971910
						5.0 x 450	3/16 x 18			BLU-32971911
						5.0 x 350	3/16 x 14			BLU-32971912
						6.0 x 350	3/16 x 14			BLU-32971913
						6.0 x 450	1/4 x 18			BLU-32971916
LA 18 PLUS LMP	E7018-1	E4918-1-H4	All	Basic DC+/AC Low moisture pickup	Premium-code quality E7018-1 for difficult-to-weld steels for offshore fabrication, boilers and pressure vessels.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-32972106
						3.2	1/8	4 x 5	4 x 11	BLU-32972108
						4.0	5/32			BLU-32972110
						5.0	3/16			BLU-32972112
						6.0	1/4			BLU-32972116
						2.5	3/32	4 x 2.5	4 x 5.5	BLU-32972906
						3.2	1/8			BLU-32972908
						4.0	5/32			BLU-32972910
						5.0	3/16			BLU-32972912
LA 18 LMP	E7018-1	E4918-1-H4	All	Basic DC+/AC Low moisture pickup	For applications requiring a superior impact strength at -45°C (-50°F).	2.5	3/32	4 x 2.5	4 x 5.5	BLU-32972706
						3.2	1/8	4 x 5	4 x 11	BLU-32972708
						4.0	5/32			BLU-32972710
						6.0	1/4			BLU-32972712
NUCLEARC LA 7018	E7018-1	E4918-1-H4	All	Basic DC+/AC	Certified for welding nuclear power plant. ASME Section III Nuclear power plant component.	2.5	3/32	4 x 2.5	4 x 5.5	BLU-32979006
						3.2	1/8	4 x 5	4 x 11	BLU-32979008
						4.0	5/32			BLU-32979010
						5.0	3/16			BLU-32979012
LA 7028	E7028	E4928	Flat/ Horizontal	Basic DC+/AC	High-deposition and high-speed, low-hydrogen electrodes with good mechanical values.	3.2	1/8	4 x 5	4 x 11	BLU-32972808
						4.0	5/32			BLU-32972810
						5.0	3/16	4 x 4.5	4 x 10	BLU-32972812

Low-hydrogen electrode length : 2.5 mm = 300 mm (12")  
 3.2 mm, 4.0 mm = 350 mm (14")  
 5.0 mm, 6.0 mm = 450 mm (18")  
 \* Electrode length = 450 mm (18")

\* Electrode length = 450 mm (18")

Note: Blueshield electrodes may meet code requirements other than those listed.  
 Please consult a representative for a complete listing of the code requirements for our electrodes.

FILLER  
METALS

## SMAW - Shielded-Metal Arc Welding

# BLUESHIELD LOW-ALLOY ELECTRODES

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
LA 7018-A1	E7018-A1	E4918-A1	All	Basic DC+/AC	1/2% molybdenum electrodes. Boilers and pressure vessel work, low-alloy with stress relief requirement.	2.5	3/32	4 x 2.5	5.5	BLU-32973006
						3.2	1/8	4 x 5	11	BLU-32973008
						4.0	5/32			BLU-32973010
						5.0	3/16			BLU-32973012
LA 8018-C1	E8018-C1	E5518-C1	All	Basic DC+/AC	2 1/4% nickel electrodes. Weld metal toughness down to -60°C (-76°F).	2.5	3/32	4 x 2.5	5.5	BLU-32973906
						3.2	1/8	4 x 5	11	BLU-32973908
						4.0	5/32			BLU-32973910
						5.0	3/16			BLU-32973912
LA 8018-C2	E8018-C2	E5518-C2	All	Basic DC+/AC	3% nickel electrodes. Weld metal toughness down to -75°C (-103°F).	2.5	3/32	4 x 2.5	5.5	BLU-32974006
						3.2	1/8	4 x 5	11	BLU-32974008
						4.0	5/32			BLU-32974010
						5.0	3/16			BLU-32974012
LA 8018-C3	E8018-C3	E5518-C3	All	Basic DC+/AC	1% nickel electrodes. Weld metal toughness down to -40°C (-40°F).	2.5	3/32	4 x 2.5	5.5	BLU-32973806
						3.2	1/8	4 x 5	11	BLU-32973808
						4.0	5/32			BLU-32973810
						5.0	3/16			BLU-32973812
LA 8018-B2	E8018-B2	E5518-B2	All	Basic DC+/AC	1 1/4Cr-1/2Mo electrodes for boilers and pressure piping and vessels (A387, P11, P12).	2.5	3/32	4 x 2.5	5.5	BLU-32975006
						3.2	1/8	4 x 5	11	BLU-32975008
						4.0	5/32			BLU-32975010
						5.0	3/16			BLU-32975012
LA 9018-B3	E9018-B3	E6218-B3	All	Basic DC+/AC	2 1/4Cr-1Mo electrodes for boilers, pressure piping and vessels (A387, P22).	2.5	3/32	4 x 2.5	5.5	BLU-32976006
						3.2	1/8	4 x 5	11	BLU-32976008
						4.0	5/32			BLU-32976010
						5.0	3/16			BLU-32976012
LA 9018-M	E9018-M	E6218-M	All	Basic DC+/AC	High-tensile strengths steels. Quenched and tempered steel.	3.2	1/8	4 x 5	11	BLU-32975508
						4.0	5/32			BLU-32975510
						5.0	3/16			BLU-32975512
LA 10018-M	E10018-M	E6918-M	All	Basic DC+/AC	Welding steel with 710 MPa (100 ksi) tensile strength.	3.2	1/8	4 x 5	11	BLU-32977508
						4.0	5/32			BLU-32977510
						5.0	3/16			BLU-32977512
LA 10018-D2	E10018-D2	E6918-D2	All	Basic DC+/AC	High-tensile strength steels. Manganese-moly castings. Armour plates.	2.5	3/32	4 x 2.5	5.5	BLU-32977006
						3.2	1/8	4 x 5	11	BLU-32977008
						4.0	5/32			BLU-32977010
						5.0	3/16			BLU-32977012
LA 11018-M	E11018-M	E7618-M	All	Basic DC+/AC	Welding steel with 760 MPa (110 ksi) tensile strength (T1 steel).	2.5	3/32	4 x 2.5	5.5	BLU-32971006
						3.2	1/8	4 x 5	11	BLU-32971008
						4.0	5/32			BLU-32971010
						5.0	3/16			BLU-32971012
LA 12018-M	E12018-M	E8318-M	All	Basic DC+/AC	Welding steel with 830 MPa (120 ksi) tensile strength.	6.0	1/4	4 x 5	11	BLU-32971016
						3.2	1/8			BLU-32978008
						4.0	5/32			BLU-32978010
						5.0	3/16			BLU-32978012
LA 12018-M	E12018-M	E8318-M	All	Basic DC+/AC	Welding steel with 830 MPa (120 ksi) tensile strength.	6.0	1/4	4 x 5	11	BLU-32978016
						3.2	1/8			BLU-32978008
						4.0	5/32			BLU-32978010
						5.0	3/16			BLU-32978012

Low-alloy electrode length: 2.5 mm = 300 mm (12")  
 3.2 mm, 4.0 mm, 5.0 mm = 350 mm (14")  
 6.0 mm = 450 mm (18")

Note: Blueshield electrodes may meet code requirements other than those listed.  
 Please consult a representative for a complete listing of the code requirements for our electrodes.

## SMAW - Shielded-Metal Arc Welding

# BLUESHIELD MNR

## SPECIALTY WELDING ELECTRODES FOR MAINTENANCE AND REPAIR



### Welding: the science of joining by fusion of steel.

Air Liquide has mastered welding for decades and offers a complete line of advanced stick electrodes for maintenance and repair (MNR), hardfacing and many other applications where high quality welding technologies are required. If it can be welded, our Blueshield MNR products will meet the challenge.

NAME	BLUESHIELD MNR	APPLICATION	POSITION	POLARITY	DIAMETER		PACKAGING			ITEM NUMBER	
					MM	IN	KG	LB			
Mild Steel	4 x 4	Mild steel electrode for general maintenance and adverse conditions. Easily welds galvanized, painted, rusted or contaminated steels in service. For maximum penetration and digging action on ornamental iron, steel furniture, heavy and farm machinery parts.	All	DC +/-, AC	2.5	3/32	0.45	1	Tube	BLU-53111025	
					3.2	1/8				BLU-53111032	
					2.5	3/32	5	11	Heavy plastic box	BLU-53111525	
					3.2	1/8				BLU-53111532	
					4.0	5/32				BLU-53111540	
	Universal	High speed welding on thin gauge, clean or new steel components. Universal is a versatile, general-purpose electrode for maintenance and fabrication. Welds all positions: flat, vertical up and down, and overhead at same amperage setting.	All	DC +/-, AC	1.6	0.062	0.45	1	Tube	BLU-53113016	
					2.5	3/32				BLU-53113025	
					3.2	1/8	5	11	Heavy plastic box	BLU-53113032	
					2.5	3/32				BLU-53113525	
					3.2	1/8				BLU-53113532	
4.0	5/32	BLU-53113540									
Low Alloy Steel	Chinook	Perfect for all position welding of fine- grained structural and construction steels. Excellent mechanical properties and perfect for X-Ray work. Unique, stable spray-type arc. Excellent on root passes and positional welding.	All	DC +/-, AC	2.5	3/32	5	11	Heavy plastic box	BLU-53116525	
					3.2	1/8				BLU-53116532	
					4.0	5/32				BLU-53116540	
	Striker	Extra low hydrogen and moisture resistant "18" type electrode. Never miss a weld start or tack! Welding minimum 70 000 psi tensile steel such as boiler, pipe, shipbuilding, construction, structural and cast steels. Great choice for welder appeal and weldability.	All	DC +/-, AC	2.5	3/32	0.45	1	Tube	BLU-53118025	
					3.2	1/8				BLU-53118032	
					2.5	3/32	5	11	Heavy plastic box	BLU-53118525	
					3.2	1/8				BLU-53118532	
					4.0	5/32				BLU-53118540	
	High Alloy Steel	Rebel	High manganese stainless for "difficult to weld", high-strength, dissimilar steels. Good resistance to corrosion and cavitation damage (hydro turbines and pumps). Use as build up buffer layers for maximum impact resistance prior to hardfacing. Welds 14% manganese steels, alloyed, structural and heat treatable steels.	All	DC +, AC	2.5	3/32	5	11	Heavy plastic box	BLU-53207525
						3.2	1/8				BLU-53207532
4.0						5/32	BLU-53207540				
Xtreme		High manganese stainless for "difficult to weld", high-strength, dissimilar steels. Good resistance to corrosion and cavitation damage (hydro turbines and pumps). Use as build up buffer layers for maximum impact resistance prior to hardfacing. Welds 14% manganese steels, alloyed, structural and heat treatable steels.	All	All +, AC	1.6	0.062	0.45	1	Tube	BLU-53212016	
					2.5	3/32				BLU-53212025	
					3.2	1/8	5	11	Heavy plastic box	BLU-53212032	
					2.5	3/32				BLU-53212525	
					3.2	1/8				BLU-53212532	
4.0		5/32	BLU-53212540								
Cutting and Gouging		Eraser	Gouge, bevel or cut all metals including stainless steels, aluminums and copper. Eraser uses the power of the electrical arc and a special coating to remove and "erase" metal.	All	DC -, AC	2.5	3/32	2.5	5	Heavy plastic box	BLU-53262325
	3.2					1/8	BLU-53262332				
	4.0					5/32	BLU-53262340				
	5.0					3/16	BLU-53262350				

## SMAW - Shielded-Metal Arc Welding

**BLUESHIELD MNR**

## SPECIALTY WELDING ELECTRODES FOR MAINTENANCE AND REPAIR

NAME	BLUESHIELD MNR	APPLICATION	POSITION	POLARITY	DIAMETER		PACKAGING			ITEM NUMBER
					MM	IN	KG	LB		
Cast Iron	Cast 55	A 55% nickel cast iron but with actual nickel content increased to 60%. Cast 55 is "barium free" for joining dirty and contaminated cast irons. Welds a wide variety of ductile, nodular and malleable cast irons. Extra nickel offers crack resistance and maximum machinability. Strong arc penetrates surface contaminants.	All	DC +, AC	2.5	3/32	5	11	Heavy plastic box	BLU-53455525
					3.2	1/8				BLU-53455532
					4.0	5/32				BLU-53455540
	Tri-Cast	Copper clad "tri-metal" cast iron nickel-based electrode. Iron-nickel-copper chemistry. Proprietary deposit chemistry yields a unique combination of softness, ductility and tensile strength. Higher welding speed creates extremely small heat affected zone and low heat input.	All	DC +, AC	2.5	3/32	0.45	1	Tube	BLU-53460025
					3.2	1/8				BLU-53460032
					2.5	3/32	5	11	Heavy plastic box	BLU-53460525
					3.2	1/8				BLU-53460532
					4.0	5/32				BLU-53460540
	Cast 99	99% nickel cast iron electrode with 100% non-conductive flux coating. Very soft machinable welds, porosity free and excellent weldability. Cast 99 is especially suited for welding in deep recesses or close access due to the non-conductive flux coating.	All	DC +, AC	2.5	3/32	5	11	Heavy plastic box	BLU-53499525
					3.2	1/8				BLU-53499532
					4.0	5/32				BLU-53499540
Aluminum	Lite	Coated aluminum electrode for arc welding and brazing of aluminum alloys. 5% silicon aluminum electrode. Welds aluminums alloyed with copper, silicon and magnesium. Excellent for joining dissimilar grades of aluminum.	Flat, Horizontal	DC +	2.5	3/32	0.45	1	Tube	BLU-53543025
					3.2	1/8				BLU-53543032
					2.5	3/32	2.5	5.5	Heavy plastic box "Vacuum pack"	BLU-53543525
					3.2	1/8				BLU-53543532
Silver Brazing	Silver 45	Silver-based flux-coated rod for low temperature brazing. Super active flux-coated "cadmium free" silver brazing alloy with 45% silver. Joins many types of metals and dissimilar materials. Special "fast flow" coating for maximum de-oxidation and protection of the weld.	—	Flame	1.6	0.062	0.45	1	Tube	BLU-53545016
					2.5	3/32				BLU-53545025
Hardfacing	Builder 38	38 Rockwell "C" electrode for impact resistant build-up on steels or prior to hardfacing. Offers superior toughness, compression and impact resistance. For tractor shoes, links, rollers, sprocket and idlers, crane and mine wheels and brake drums, shafts, gears, drive sprocket, track pads, mill hammer parts, buckets, etc.	All	DC +/-, AC	3.2	1/8	5	11	Heavy plastic box	BLU-53738532
					4.0	5/32				BLU-53738540
					5.0	3/16				BLU-53738550
Impact and Heavy Impact Build Up	Builder MN	Manganese (Mn) alloyed electrode for heavy impact resistant or build-up prior to hardfacing. Builder MN offers outstanding toughness, compression and impact resistance. Deposit hardens under impact loading from 2-5 times the initial hardness. Joining and surfacing of wear plates and parts subjected to impact wear. For crushing rolls, jaws and concaves; rail equipment, switches, railways couplers, crossing and frogs; construction equipment, manganese steel, shovel buckets, impact hammer, bucket, milling hammer, crusher jaws, dredge pump shells, armor plating, etc.	All	DC +, AC	3.2	1/8	5	11	Heavy plastic box	BLU-53748532
					4.0	5/32				BLU-53748540
					5.0	3/16				BLU-53748550

## SMAW - Shielded-Metal Arc Welding

**BLUESHIELD MNR**

## SPECIALTY WELDING ELECTRODES FOR MAINTENANCE AND REPAIR

NAME	BLUESHIELD MNR	APPLICATION	POSITION	POLARITY	DIAMETER		PACKAGING			ITEM NUMBER	
					MM	IN	KG	LB			
Hardfacing  Abrasion + Impact and Metal-Metal	Hard 58	58 Rockwell "C" general hardfacing electrode for combined abrasion and moderate impact. Can be used as under layer. Hardfacing of mining, rock and earth moving equipment, shovels, buckets, crawler shoes, bulldozer and scraper blades, crusher rolls, bucket teeth and lips, mixer blade, mill hammer, cutting edge, gyratory crusher, bucket liner, jaws, plowing implements; dipper lips, dredge pump, pump casing, etc.	Flat, Horizontal	DC +, AC	3.2	1/8	0.45	1	Tube	BLU-53758032	
					4.0	5/32				BLU-53758040	
					3.2	1/8	5	11	Heavy plastic box	BLU-53758532	
					4.0	5/32				BLU-53758540	
					5.0	3/16				BLU-53758550	
	Hard 60	60 Rockwell "C" hardfacing electrode for moderate impact and moderate abrasion offering high deposition rate. Especially suited for metal to metal wear applications involving steel, manganese steel and cast iron. Hardfacing of mining equipment, shovels, buckets, crawler shoes, plowing implements; bulldozer blades, crawler tractor shoes, links, rollers and idlers, crane and mine car wheels, shafts, gears, drive sprocket, tracks, etc.	Flat, Horizontal	DC +/-, AC	3.2	1/8	5	11	Heavy plastic box	BLU-53760532	
					4.0	5/32				BLU-53760540	
	Hardfacing  Maximum Abrasion and Abrasion temperature	Krome 62	62 Rockwell "C" contains large amounts of chromium carbide. Surfacing against severe abrasive wear and moderate impact. Krome 62 offers smooth overlays and excellent weldability. Hardfacing of wear plates; shovel teeth; mechanized shovel buckets; bulldozer blades, mining equipment, road-building machinery, agricultural tools, earth moving equipment in abrasive soil, conveyer screw and chains, mixer, pipeline elbows, send chute, bucket lips and teeth, crushing hammer, roll crusher, steel mill guides, punch rolls, valves, pump casing and impellers, etc.	Flat, Horizontal	DC +, AC	2.5	3/32	5	11	Heavy plastic box	BLU-53762525
						3.2	1/8				BLU-53762532
						4.0	5/32				BLU-53762540
5.0						3/16	BLU-53762550				
Krome 68		Maximum hardness 68 Rockwell "C" deposits enriched with Niobium (Nb) and Chromium (Cr) carbides. Ultimate combination of abrasion resistance and high temperature hardness retention. Hardfacing of wear plates, shovel teeth, buckets, bulldozer blades, iron and steel making industry; ash plows, coke crusher, screw conveyer, rake teeth in furnaces, mineral crushers; screens, production of construction materials and various minerals; quarries, cement plants, agriculture grain threshers, valves, exhaust fan, agitator finger, mill guides, mixes blades, bucket lips, asphalt mixer, crusher hammer, etc.	Flat, Horizontal	DC +/-, AC	3.2	1/8	5	11	Heavy plastic box	BLU-53768532	
					4.0	5/32				BLU-53768540	
					5.0	3/16				BLU-53768550	



## GMAW - Gas-Metal Arc Welding

# BLUESHIELD SOLID WIRES

## SMALL PACKAGING

Whether you are a production, MIG welder or home hobbyist, we have MIG wire packages to cover your welding needs. We have invested countless hours in research, development and testing to ensure you get the arc performance, consistent feedability and productivity that the industry has come to expect.



NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
						MM	IN*	KG	LB		
LA S-6	ER70S-6	ER49S-6 CAN/CSA ISO 14341 B-G49A3CG6	All-position welding using short- circuit or pulse-spray arc transfer	Lightly copper- coated	Welding of low-carbon steel plates, tubing, piping, structural members, steel castings, pressure vessels, etc. Also commonly used to weld dirty or rusty materials with minimal pre-cleaning.	0.6	0.023	0.9	2	Spool	BLU-38978323
						0.8	0.030				BLU-38978330
						0.9	0.035				BLU-38978335
						1.2	0.045				BLU-38978345
						0.6	0.023	5	11		BLU-38977823
						0.8	0.030				BLU-38977830
						0.9	0.035				BLU-38977835
						1.2	0.045				BLU-38977845
						0.8	0.030	20	44		BLU-38978430
						0.9	0.035				BLU-38978431
						1.14	0.045				BLU-38978435
						1.32	0.052				BLU-38978445
						1.6	0.062				BLU-38978452
											BLU-38978462
LA S-3	ER70S-3	ER49S-3 CAN/CSA ISO 14341 B-G49A2CG3	All-position welding using short- circuit or pulse-spray arc transfer	Lightly copper- coated	Welding of low-carbon steel plates commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands are required.	0.9	0.035	20	44	Spool	BLU-38978135
						1.14	0.045				BLU-38978145
						1.32	0.052				BLU-38978152
						1.6	0.062				BLU-38978162

\* Approximate diameter equivalent



**BLUESHIELD:**  
the quality you want for  
your welding work

# BLUESHIELD SOLID WIRES

## LARGE PACKAGING

If enhanced productivity is your aim, we have a variety of bulk packaging options from which to choose. Whether your preference is large spools or drums, we have the right product to suit your welding needs. Our state-of-the-art bulk-wire packaging system provides a “tangle-free” weld, and is relied on by some of the largest automotive welding wire users in North America. This packaging system enhances productivity through superior weld quality.

NAME	AWS CLASS*	CSA/CWB CLASS*	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
						MM	IN**	KG	LB		
LA S-3	ER70S-3	ER-49S-3 CAN/CSA ISO 14341 B-G49A2CG3	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	0.9	0.035	150	330	Reel	BLU-38979135
						1.0	0.040				BLU-38979140
						1.14	0.045				BLU-38979145
						1.32	0.052				BLU-38979152
						1.6	0.062	450	990		BLU-38979162
						0.9	0.035				BLU-38979635
						1.14	0.045				BLU-38979645
						1.32	0.052				BLU-38979652
						1.6	0.062	BLU-38979662			
						0.9	0.035	750	1650		BLU-38979635AR
						1.14	0.045				BLU-38979645AR
						1.32	0.052				BLU-38979652AR
						1.6	0.062				BLU-38979662AR
Straight Weld LA S-3	ER70S-3	ER49S-3 CAN/CSA ISO 14341 B-G49A2CG3	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	0.9	0.035	226.8	500	Drum	BLU-38977135
						1.0	0.040				BLU-38977140
						1.14	0.045				BLU-38977145
						1.32	0.052				BLU-38977152
						0.9	0.035	453.6	1000		BLU-38977135AD
						1.0	0.040				BLU-38977140AD
						1.14	0.045				BLU-38977145AD
						1.32	0.052				BLU-38977152AD
LA S-6	ER70S-6	ER49S-6 CAN/CSA ISO 14341 B-G49A3CG6	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate, tubing, piping, structural members, steel castings, pressure vessels, etc. Also commonly used to weld dirty or rusty materials with minimal pre-cleaning.	0.9	0.035	150	330	Reel	BLU-38973935
						1.0	0.040				BLU-38973940
						1.14	0.045				BLU-38973945
						1.32	0.052				BLU-38973952
						1.6	0.062	450	990		BLU-38973962
						0.9	0.035				BLU-38971035
						1.0	0.040				BLU-38971040
						1.14	0.045				BLU-38971045
						1.32	0.052				BLU-38971052
						1.6	0.062	750	1650		BLU-38971062
						0.9	0.035				BLU-38971035AR
						1.0	0.040				BLU-38971040AR
						1.14	0.045				BLU-38971045AR
						1.32	0.052				BLU-38971052AR
						1.6	0.062				BLU-38971062AR
Straight Weld LA S-6	ER70S-6	ER49S-6 CAN/CSA ISO 14341 B-G49A3CG6	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate, tubing, piping, structural members, steel castings, pressure vessels, etc. Also commonly used to weld dirty or rusty materials with minimal pre-cleaning.	0.9	0.035	226.8	500	Drum	BLU-38977435
						1.0	0.040				BLU-38977440
						1.14	0.045				BLU-38977445
						1.32	0.052				BLU-38977452
						0.9	0.035	453.6	1000		BLU-38977435AD
						1.0	0.040				BLU-38977440AD
						1.14	0.045				BLU-38977445AD
						1.32	0.052				BLU-38977452AD

\* Some products are also naval-approved. Contact your local representative for more information. \*\* Approximate diameter equivalent

# BLUESHIELD CARBON STEEL METAL-CORED WIRES

## SMALL PACKAGING



Blueshield metal-cored wires offer outstanding performance, weld quality and value for those extremely demanding, high-speed, semi-automatic or robotic welding applications. Whether it's a code-quality job or you simply require the versatility a metal-cored wire has to offer, we have the product to meet your welding needs.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIAMETER		PACKAGING		ITEM NUMBER							
							MM	IN	KG	LB								
LA C-3M	E70C-3M-H8	—	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	Used for similar welding applications as LA S-3 MIG wire.	—	1.2	0.045	20.4	45	Spool	BLU-37960563						
							1.4	0.052				BLU-37960564						
							1.6	0.062				BLU-37960565						
LA C-6	E70C-6M-H4/ E70C-6-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	A good, high-speed, general-purpose single- and multi-pass semi-automatic and automatic mild-steel welding wire. Weld metal mechanical properties are similar to those of LA S-6 MIG wire.	CO <sub>2</sub> Blu 6 Blu 7 Blu 8 95 Ar/5 CO <sub>2</sub> Blu 21 Arcal 14 Arcal 211 Arcal 21	0.9	0.035	11.3	25	Spool	BLU-37960412						
							1.2	0.045				BLU-37960463						
							1.4	0.052				BLU-37960464						
													1.6	0.062	20.4	45	Spool	BLU-37960465
													1.2	0.045				BLU-37960433
													1.4	0.052				BLU-37960434
													1.6	0.062	27.2	60	Coil	BLU-37960435
													2.0	5/64				BLU-37960436
													2.4	3/32				BLU-37960437
							LA C-6LS	E70C-6-H4 E492C-6M-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	General purpose single or multipass flat/horizontal position, metal cored wire designed to weld carbon and some low alloy steel.	CO <sub>2</sub> Blu 7 Arcal 14 Arcal 211	1.2	0.045	226.8	500	Drum
1.4	0.052																	
1.6	0.062																	
						1.2								0.045	362.8	800	Hex Drum	BLU-37965254Hex
						1.6								0.062				
						1.2								0.045				
							1.4	0.052	27.2	60	Coil	BLU-37965233						
							1.6	0.062					20.4	45	Spool	BLU-37965263		
LA C-6LF	E70C-6M-H4/ E70C-6-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	An excellent low-fume, high-speed semi-automatic and automatic mild-steel welding wire. Weld mechanical properties are similar to those of LA S-6 MIG wire. Applications include car and truck frames, structural steel and trailers.	Blu 6 Blu 7 Blu 8 CO <sub>2</sub> 95 Ar/5 CO <sub>2</sub> Arcal 21 Blu 21 Arcal 211 Arcal 14	1.2	0.045	20.4	45	Spool	BLU-37965063						
							1.4	0.052				BLU-37965064						
							1.6	0.062				BLU-37965065						
													1.2	0.045	27.2	60	Coil	BLU-37965033
													1.4	0.052				BLU-37965034
													1.6	0.062				BLU-37965035
LA C-6CT	E70C-6M-H4/ E70C-6-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	Similar welding applications as LA C-6, offering lower temperature mechanical properties down to -40°C (-40°F).	Blu 6 Blu 7 Blu 8 95 Ar/5 CO <sub>2</sub> Blu 21 Arcal 21 Arcal 211 CO <sub>2</sub>	1.2	0.045	20.4	45	Spool	BLU-37965763						
							1.4	0.052				BLU-37965764						
							1.6	0.062				BLU-37965765						
LA C-6CR	E70C-6M-H4/ E70C-6-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	For welding over rust, mill scale and other contaminants typically found in harsh environments, such as structural steel fabrication, maintenance and repair.	Blu 6 Blu 7 Blu 8 95 Ar/5 CO <sub>2</sub> Blu 21 Arcal 21 Arcal 211 CO	1.2	0.045	20.4	45	Spool	BLU-37965563						
							1.4	0.052				BLU-37965564						
							1.6	0.062				BLU-37965565						

# BLUESHIELD CARBON STEEL METAL-CORED WIRES

## LARGE PACKAGING

Our unique manufacturing process and attention to detail result in a superior bulk wire package that makes your operation as trouble-free as possible.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
						MM	IN	KG	LB		
LA C-6	E70C-6M-H4/ E70C-6-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	A good, high-speed, general-purpose, single and multi-pass semi-automatic and automatic mild-steel welding wire. Weld metal mechanical properties are similar to those of LA S-6 MIG wire.	1.2	0.045	226.8	500	Reel	BLU-37960443
						1.4	0.052				BLU-37960444
						1.6	0.062				BLU-37960445
						0.9	0.035			Drum	BLU-37960452
						1.2	0.045				BLU-37960453
						1.4	0.052				BLU-37960454
						1.6	0.062				BLU-37960455
						1.2	0.045	362.8	800	BLU-37960453HEX	
						1.4	0.052			BLU-37960454HEX	
						1.6	0.062			BLU-37960455HEX	
						2.0	5/64			BLU-37960456HEX	
LA C-6LF	E70C-6M-H4/ E70C-6-H4	E491C-6M-H4/ E491C-6-H4	Flat / horizontal, all-position welding using short-circuit or pulsed-spray transfer	Metal-cored	An excellent, low-fume, high-speed, semi-automatic and automatic mild-steel welding wire. Includes car and truck frames, structural steel and trailers.	1.2	0.045	226.8	500	Reel	BLU-37965043
						1.4	0.052				BLU-37965044
						1.6	0.062				BLU-37965045
						1.2	0.045			Drum	BLU-37965053
						1.4	0.052				BLU-37965054
						1.6	0.062				BLU-37965055

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METALS

**Combine Blueshield consumables with  
Blueshield or Arcal gases for an exceptional  
welding performance package.**



# BLUESHIELD LOW-ALLOY STEEL METAL-CORED WIRES

## LARGE PACKAGING

All Blueshield low-alloy steel metal-cored wires come conveniently packaged in 20.4 kg (45 lb) spools.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIAMETER		PACKAGING			ITEM NUMBER
							MM	IN	KG	LB		
LA 80C-W	E80C-G-H8	—	Flat / horizontal	Metal-cored, low-alloy steels	Used to weld weathering grade steels, for example "Cor-ten", ASTM A242 and A588.	—	1.2	0.045	20.4	45	Spool	BLU-37962163
							1.4	0.052	20.4	45	Spool	BLU-37962164
							1.6	0.062	20.4	45	Spool	BLU-37962165
LA 80 C-Ni1	E80C-Ni1-H4	E80C-Ni1-H4	Flat / horizontal	Metal-cored, low-alloy steels, 1% nickel	For welding high-strength steels requiring weld metal toughness properties down to -40°C (-40°F)	Blu 7 Arcal 211	1.2	0.045	20.4	45	Spool	BLU-37963763
							1.4	0.052	20.4	45	Spool	BLU-37963764
							1.6	0.062	20.4	45	Spool	BLU-37963765
LA 80 C-Ni2*	E80C-Ni2-H8	—	Flat / horizontal	Metal-cored, low-alloy steels, 2% nickel	For welding high-strength micro-alloy steels requiring weld metal toughness properties down to -50°C (-60°F).	—	1.2	0.045	20.4	45	Spool	BLU-37964463
							1.4	0.052	20.4	45	Spool	BLU-37964464
							1.6	0.062	20.4	45	Spool	BLU-37964465
LA 90C-B3	E90C-B3-H16	—	Flat / horizontal	Metal-cored, low-alloy steels, 2 1/4 Cr / 1% Mo	Used to weld Cr/Mo steels in high-temperature and high-pressure piping applications.	—	1.2	0.045	20.4	45	Spool	BLU-37962063
							1.4	0.052	20.4	45	Spool	BLU-37962064
							1.6	0.062	20.4	45	Spool	BLU-37962065
LA 90 C-M*	E90C-G-H8	—	Flat / horizontal	Metal-cored, low-alloy steels	High-strength steels with a minimum tensile strength of 620 MPa (90 ksi). Impact requirement: -50°C (-60°F).	—	1.2	0.045	20.4	45	Spool	BLU-37961363
							1.4	0.052	20.4	45	Spool	BLU-37961364
							1.6	0.062	20.4	45	Spool	BLU-37961365
LA 100 C-MG*	E100C-G-H4	E100C-G-H4	Flat / horizontal	Metal-cored, low-alloy steels	For welding high-strength steels with a minimum tensile strength of 690 MPa (100 ksi)	Blu 7 Blu 4	1.2	0.045	20.4	45	Spool	BLU-37961063
							1.4	0.052	20.4	45	Spool	BLU-37961064
							1.6	0.062	20.4	45	Spool	BLU-37961065
LA 110 C-MG*	E110C-G-H8	E110C-G-H8	Flat / horizontal	Metal-cored, low-alloy steels	For welding high-strength low-alloy steels such as ASTM, A514.	Blu 4	1.2	0.045	20.4	45	Spool	BLU-37961263
							1.4	0.052	20.4	45	Spool	BLU-37961264
							1.6	0.062	20.4	45	Spool	BLU-37961265

\* Manufactured upon request.



## FCAW - Flux-Cored Arc Welding

# BLUESHIELD CARBON STEEL FLUX-CORED WIRES

## SELF-SHIELDED

Our North American roots in FCAW wire manufacturing reach back for more than 40 years. During this period, we have continually strived to achieve the highest standard in product quality, consistency and value. This is evident through the extensive product line and packaging options available today. With Blueshield FCAW wires, you have a variety of products to choose from, such as self-shielded, low-fume, hydrogen-controlled, low-temperature service and high-strength wires designed to meet the most demanding industrial welding applications on the market.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
						MM	IN	KG	LB		
LA UNISHIELD	E70T-4-H16	E492T-4-H16	Flat / Horizontal	Gasless	A good single- or multi-pass, general-purpose wire for light gauge steel plate fabrication and structural steel fabrication where there is no requirement for notch toughness properties.	2.4	3/32	25	55	Coil	BLU-37971506
						3.0	0.120	22.7	50		BLU-37964728
LA T-11	E71T-11-H16 E71T-GS-H16 E491T-11-H16	E491T-11-H16	All	Gasless	A good general-purpose wire for maintenance and repair applications in material thickness from 16 gauge through 12.7 mm (1/2").	0.9	0.035	4.5	10	Spool	BLU-37961702
											BLU-37961712
						1.2	0.045	11.3	25		BLU-37961713
						1.6	1/16				BLU-37961715
LA T-14	E71T-14-H16, E71T-GS-H16	E491T-14-H16	All	Gasless	An excellent single-pass wire for welding thin-gauge (22 gauge to 4.8 mm (3/16") galvanized or aluminized carbon steel materials typically found in automotive sheet-metal repair and duct-work welding.	0.8	0.030	0.9	2	Spool	BLU-37960181
						0.9	0.035				BLU-37960182
						0.8	0.030	4.5	10		BLU-37960101
						0.9	0.035				BLU-37960102
						0.8	0.030				BLU-37960111
						0.9	0.035	11.3	25		BLU-37960112
						1.2	0.045				BLU-37960113
						1.6	0.062				BLU-37960115

FILLER  
METALS



## FCAW - Flux-Cored Arc Welding

# BLUESHIELD CARBON STEEL FLUX-CORED WIRES

GAS SHIELDED

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIAMETER		PACKAGING			ITEM NUMBER
							MM	IN	KG	LB		
LA T-9	E70T-9-H8/ E70T-9M-H8 E70T-1-H8/ E70T-1M-H8	E492T-9-H8 E492T-9M-H8	Flat / horizontal	Rutile- based slag system	A general-purpose, single- or multi-pass wire for welding mild-to medium-carbon steels, such as structural members, pressure vessels, rolling stocks and earth-moving equipment. Steel grades include ASTM, A285, A515 Gr. 70 and A516 Gr. 70.	Blu 8 CO <sub>2</sub> Arcal 211	1.2	0.045	15	33	Spool	BLU-37960823
							1.6	1/16	15	33	Spool	BLU-37971415
									27.2	60	Coil	BLU-37971434
							2.0	5/64	27.2	60	Coil	BLU-37971435
							2.4	3/32	27.2	60	Coil	BLU-37971436
							1.6	1/16	280	616	Reel	BLU-37971409
							2.0	5/64	280	616	Reel	BLU-37971401
							2.4	3/32	280	616	Reel	BLU-37971403
							1.6	1/16	226.8	500	Drum	BLU-37960855
LA T-9 PLUS	E70T-9-H8/ E70T-9M-H8/ E70T-1-H8/ E70T-1M-H8	E492T-9-H8 E492T-9M-H8	Flat / horizontal	Rutile- based slag system	A highly efficient single- or multi-pass wire for welding mild-to medium-carbon steels, such as structural members, pressure vessels, rolling stocks and earth-moving equipment. Also suitable for single-pass, high-speed fillet weld applications with excellent slag removal.	CO <sub>2</sub> Blu 8	1.2	0.045	15	33	Spool	BLU-37963373
							1.6	1/16	15	33	Spool	BLU-37972015
									27.2	60	Coil	BLU-37972034
							2.0	5/64	27.2	60	Coil	BLU-37972035
							2.4	3/32	27.2	60	Coil	BLU-37972036
							1.6	1/16	280	616	Reel	BLU-37972009
							2.0	5/64	280	616	Reel	BLU-37972008
							2.4	3/32	280	616	Reel	BLU-37972003
							1.6	1/16	226.8	500	Drum	BLU-37963355
LA T-9 LF	E70T-9-H16/ E70T-1-H16	E492T-9-H16	Flat / horizontal	Rutile- based slag system	An excellent general-purpose, single- or multi-pass wire used with CO <sub>2</sub> shielding gas for welding mild-to medium-carbon steels, particularly when less fume or smoke is desired e.g. when welding indoors or in confined areas. Applications include structural steel and general shop fabrication.	CO <sub>2</sub>	1.2	0.045	15	33	Spool	BLU-37962673
							1.6	1/16	15	33	Spool	BLU-37962675
									27.2	60	Coil	BLU-37962635
							2.0	5/64	27.2	60	Coil	BLU-37962636
							2.4	3/32	27.2	60	Coil	BLU-37962637
							1.6	1/16	280	616	Reel	BLU-37962645
							2.0	5/64	280	616	Reel	BLU-37962646
							2.4	3/32	280	616	Reel	BLU-37962647
							1.6	1/16	226.8	500	Drum	BLU-37962655
LA T-91	E71T-9-H8/ E71T-9M-H8 E71T-1-H8/ E71T-1M-H8	E491T-9-H8/ E491T-1-H8 E491T-9M-H8/ E491T-1M-H8	All	Rutile- based slag system	An excellent general-purpose, all-position wire for welding mild-to medium-carbon steels typically found in structural field fabrication, steel beam manufacturing and construction. Steel grades include A36, A53, A106, A108 and A109.	CO <sub>2</sub> Blu 8 Arcal 211	1.2	0.045	15	33	Spool	BLU-37971606
							1.6	1/16	15	33	Spool	BLU-37971605
							1.2	0.045	27.2	60	Coil	BLU-37971637
							1.6	1/16	27.2	60	Coil	BLU-37971634
									280	616	Reel	BLU-37971609
							1.2	0.045	226.8	500	Drum	BLU-37960253
							1.6	1/16	226.8	500	Drum	BLU-37960255
LA T-91 PLUS	E71T-9-H8/ E71T-9M-H8 E71T-1-H8/ E71T-1M-H8	E491T-9-H8/ E491T-1-H8 E491T-9M-H8/ E491T-1M-H8	All	Rutile- based slag system	A highly-efficient, all-position wire for welding mild-to medium-carbon steels, such as structural members, rolling stock and earth-moving equipment using CO <sub>2</sub> shielding gas.	CO <sub>2</sub> Blu 8	1.2	0.045	15	33	Spool	BLU-37972106
							1.6	1/16	15	33	Spool	BLU-37972105
							1.2	0.045	27.2	60	Coil	BLU-37972133
							1.6	1/16	27.2	60	Coil	BLU-37972135
									280	616	Reel	BLU-37972109
							1.2	0.045	226.8	500	Drum	BLU-37963553
							1.6	1/16	226.8	500	Drum	BLU-37963555

# BLUESHIELD CARBON STEEL FLUX-CORED WIRES

GAS SHIELDED (CONTINUED)

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIAMETER		PACKAGING			ITEM NUMBER
							MM	IN	KG	LB		
LA T-91 LF	E71T-9-H8/ E71T-9M-H8 E71T-1-H8/ E71T-1M-H8	E491T-9-H8/ E491T-1-H8 E491T-9M-H8/ E491T-1M-H8	All	Rutile-based slag system	A superior quality, all-position wire, used with CO <sub>2</sub> , Ar/CO <sub>2</sub> and Arcal 211 shielding gas mixes; for welding mild-to medium-carbon steels, particularly when less fume or smoke is desired e.g. when welding indoors or in confined areas. Applications include structural steel and general shop fabrication.	CO <sub>2</sub> Blu 7 Blu 8 Arcal 211	0.9	0.035	15	33	Spool	BLU-37963172
							1.2	0.045				BLU-37963173
							1.4	0.052				BLU-37963174
							1.6	1/16				BLU-37963175
							1.2	0.045	27.2	60	Coil	BLU-37963133
							1.4	0.052				BLU-37963134
							1.6	1/16				BLU-37963135
							1.2	0.045	280	616	Reel	BLU-37963143
							1.4	0.052				BLU-37963144
							1.6	1/16				BLU-37963145
							1.2	0.045	226.8	500	Drum	BLU-37963153
							1.4	0.052				BLU-37963154
							1.6	1/16				BLU-37963155
LA 91-T12M	E71T-12MJ-H4, E71T-1MJ-H4, E71T-9MJ-H4	E491T-12MJ-H4, E491T-1MJ-H4, E491T-9MJ-H4	All	Rutile-based slag system	A premium-quality, all-position wire intended for applications requiring weld metal toughness similar to E7018, E7018-1 low hydrogen electrodes. Typically found in heavy equipment, offshore fabrication, oil components and petrochemical environments.	Blu 8 Arcal 211	1.2	0.045	4.5	11	Spool	BLU-37980212
							1.4	0.052				BLU-37980214
							1.6	1/16				BLU-37980216
							1.2	0.045	15	33		BLU-37980112
							1.4	0.052				BLU-37980114
							1.6	1/16				BLU-37980116

FILLER  
METALS

The packaging options seem endless with Air Liquide's extensive line of Blueshield flux-cored and metal-cored products. Whether your welding job is big or small we have solutions for it all!



# BLUESHIELD LOW-ALLOY STEEL FLUX-CORED WIRES

## GAS SHIELDED

All Blueshield low-alloy steel flux-cored wires come conveniently packaged in 15 kg (33 lb) spools or 27.2 kg (60 lb) coils.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIAMETER		PACKAGING			ITEM NUMBER
							MM	IN	KG	LB		
LA 81 T1-W2*	E81T1-W2-H8/ E81T1-W2M-H8	E81T1-W2-H8 E81T1-W2M-H8	All	Rutile-based slag system, low-alloy steels Cu/Ni	Used to weld weathering grade steels, for example "Cor-ten", ASTM A242 and A588 with CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gas mixtures.	CO <sub>2</sub> Blu 8	1.2	0.045	15	33	Spool	BLU-37966673
							1.6	1/16				BLU-37966675
LA T-91 C60 Ni1	E81T1-Ni1-H8/ E81T1-Ni1M-H8	E81T1-Ni1-H8/ E81T1-Ni1M-H8	All	Rutile-based slag system, low-alloy steels 1% Ni	Used to weld a wide range of low and medium-carbon steels requiring impact properties down to -60°C (-75°F) when using CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gases. Applications include bridge construction, offshore platforms and heavy equipment. Also suitable for single-pass, high-speed fillet weld applications with excellent slag removal.	CO <sub>2</sub> Blu 8	1.2	0.045	15	33	Spool	BLU-37978106
							1.6	1/16				BLU-37978105
							1.2	0.045	27.2	60	Coil	BLU-37978107
							1.6	1/16				BLU-37978104
LA 81 T1-Ni2*	E81T1-Ni2-H8/ E81T1-Ni2M-H8	E81T1-Ni2-H8/ E81T1-Ni2M-H8	All	Rutile-based slag system, low-alloy steels 2% Ni	A versatile wire used for welding ASTM steel grades, A572, A575 and A573 using CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gas mixtures. Applications include ship-building, earth-moving and mining equipment.	CO <sub>2</sub> Blu 8	1.2	0.045	15	33	Spool	BLU-37961673
							1.6	1/16				BLU-37961675
LA 81 T1-A1*	E81T1-A1-H16	—	All	Rutile-based slag system, low-alloy steels 1/2% Mo	Used for the fabrication and erection of boilers, pressure pipes, tubing and pressure vessel applications. Steel grade include ASTM, A161, A204 and A302 gr. A. The weld metal analysis is similar to LA 7018-A1 low-hydrogen electrodes.	—	1.2	0.045	15	33	Spool	BLU-37961573
							1.6	1/16				BLU-37961575
LA 81 T1-B2*	E81T1-B2-H8	—	All	Rutile-based slag system, low-alloy steels 1 1/4% Cr/ 1/2% Mo	Single- or multi- pass, all-position welding of certain Cr/Mo-bearing steels commonly found in the fabrication of boilers and pressure vessels using a CO <sub>2</sub> shielding gas medium. The weld metal analysis is similar to LA 8018-B2 low-hydrogen electrodes.	CO <sub>2</sub>	1.2	0.045	15	33	Spool	BLU-37960773
							1.6	1/16				BLU-37960775
LA 91 T1-B3*	E91T1-B3-H8	—	All	Rutile-based slag system, low-alloy steels 2 1/4% Cr/ 1% Mo	Used for all-position welding of ASTM steel grades, A387 gr. 22 and A335 P22 pipes involved in high-temperature service applications requiring good corrosion and creep resistance.	—	1.2	0.045	15	33	Spool	BLU-37961473
							1.6	1/16				BLU-37961475

\* Manufactured upon request.

# BLUESHIELD LOW-ALLOY STEEL FLUX-CORED WIRES

GAS SHIELDED (CONTINUED)

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIAMETER		PACKAGING			ITEM NUMBER
							MM	IN	KG	LB		
LA T-91 K2	E91T1-K2-H8/ E91T1-K2M-H8	—	All	Rutile-based slag system, low-alloy steels	Used for all-position welding of high-strength, low-alloy steels requiring good low-temperature toughness properties using CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gas mixtures. Steel grades include: HY80, ASTM A710, A514 and A517.	CO <sub>2</sub> Blu 8	1.2	0.045	15	33	Spool	BLU-37979006
							1.6	1/16				BLU-37979005
LA 111 T1-K3*	E111T1-K3-H8	—	All	Rutile-based slag system, low-alloy steels	Used for all-position welding of high-strength steels requiring a minimum of 760 MPa (110 ksi) with CO <sub>2</sub> shielding gas.	—	1.2	0.045	15	33	Spool	BLU-37961973
							1.6	1/16				BLU-37961975
LA 111 T1-K3M	E111T1-K3M-H8	E111T1-K3M-H8	All	Rutile-based slag system, low-alloy steels	Specifically designed for use with Ar/CO <sub>2</sub> shielding gas mixtures when all-position welding high-strength steels, such as ASTM, A514, HY100 and T-1. Weld deposit similar to E11018-M low-hydrogen electrodes.	Blu 8	1.2	0.045	15	33	Spool	BLU-37961873
							1.6	1/16				BLU-37961875
LA 115 T5-K3*	E110T5-K3-H8	—	Flat / horizontal	Rutile-based slag system, low-alloy steels	For welding high-strength steel grades such as ASTM, A514, HY100 and T-1 when low-temperature impact properties are a primary concern.	—	1.2	0.045	15	33	Spool	BLU-37962573
							1.6	1/16				BLU-37962575
							2.4	3/32				BLU-37962577
LA 120 T5-K4*	E120T5-K4-H8	—	Flat / horizontal	Basic slag system, low-alloy steels	For single- or multi-pass welding of high-strength steel grades using CO <sub>2</sub> shielding gas. Steel grades include T-1, HY80, HY90, Naxtra 90, 100 and 110 series.	—	1.2	0.045	15	33	Spool	BLU-37962973
							1.6	1/16				BLU-37962975

\* Manufactured upon request.



**With BlueShield gases, you have the right mixture for any low-alloy gas-shielded FCAW wires.**



## Brazing

Brazing is universally used in the industry because it's economical, easy to do, and produces strong welds and leak-tight joints.

Brazing is a joining process whereby a non-ferrous filler metal or alloy is heated to a melting temperature (above 450°C / 800°F) and distributed between two or more close-fitting parts by capillary action.

In another similar usage, brazing is the use of a bronze or brass filler rod coated with flux, together with an oxy-acetylene torch, to join pieces of steel. The American Welding Society prefers to use the term “Braze Welding” for this process, as capillary attraction is not involved (unlike the prior silver brazing example).



### BASIC BRAZING PROCEDURE:

- |  |                             |
|--|-----------------------------|
| 1. Determine joint spacing   | 5. Position parts carefully |
| 2. Choose the right brazing alloy  | 6. Turn on the heat!        |
| 3. Eliminate grease and contaminants using cleaner and stainless steel brush | 7. Clean joints             |
| 4. Add flux  |                             |



# BRAZE WELDING

## BLUESHIELD MILD STEEL GAS BRAZE WELDING RODS

Blueshield mild steel, copper-coated, oxy-acetylene gas welding rods are made of high-quality carbon steel of uniform and tightly controlled analysis. These rods produce quality welds of up to 70,000 PSI tensile strength. Ideal general-purpose rods for welding all low-carbon steels.

NAME	AWS CLASS	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
				MM	IN	KG	LB	
HERCULES IRON	RG45	Oxy-fuel welding deoxidized rod	General oxy-fuel welding structural steel, plates. Minimum strength 310 MPa (45 ksi).	1.6	1/16	4.54	10	BLU-46851004
				2.4	3/32			BLU-46851006
				3.2	1/8			BLU-46851008
				5.0	3/16			BLU-46851012
				6.0	1/4			BLU-46851016
SUPERWELD	RG60	Oxy-fuel welding deoxidized rod	Oxy-fuel welding steels up to 0.30% carbon piping, pressure vessels, structural steels. Minimum strength 410 MPa (60 ksi).	1.6	1/16	4.54	10	BLU-46661004
				2.4	3/32			BLU-46661006
				3.2	1/8			BLU-46661008
				5.0	3/16			BLU-46661012
				6.0	1/4			BLU-46661016
HI-TENSILE	RG65 and ER70-S3	GTAW and oxy-fuel welding, highly-deoxidized rod	GTAW and oxy-fuel welding on carbon and high-tensile steels. Piping, tubing, pressure vessels. Minimum strength 480 MPa (70 ksi)	1.6	1/16	4.54	10	BLU-46601304
				2.4	3/32			BLU-46601306
				3.2	1/8			BLU-46601308
ER70S-2	ER70-S2	GTAW welding, triple-deoxidized rod (Al, Ti, Zr)	GTAW and oxy-fuel welding on carbon and high-tensile steels, piping, tubing, pressure vessels. This triple deoxidized rod (aluminum, titanium, zirconium) can be used for welding over rust, dirty surface and mill scale. Minimum strength 480 MPa (70 ksi).	1.6	1/16	4.54	10	BLU-46307204
				2.4	3/32			BLU-46307206
				3.2	1/8			BLU-46307208

Note: Rod length = 914 mm (36") / 5 tubes of 4.54 kg (10 lb) or 5 tubes of 2.27 kg (5 lb) in 22.68 kg (50 lb) package.

## BLUESHIELD BRONZE AND SILICON BRONZE GAS BRAZE WELDING RODS

Low-fume bronze and silicon bronze gas welding rods are made from copper/tin alloy to produce a rod that flows easily, joins a variety of metals including cast and malleable iron, galvanized steel, bronze, copper and steel.

NAME	AWS CLASS	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
				MM	IN	KG	LB	
Super Bronze	RCuZn-C	Flux-coated low-fumes brazing rod Green coating	High strength and ductility bronze for steel, cast iron, cast steel and brass, copper and bronze.	2.4	3/32	2.27	5	BLU-42971006
				3.2	1/8			BLU-42971008
				5.0	3/16			BLU-42971012
FL Bronze	RCuZn-C	Bare low-fumes brazing rod	High strength and ductility bronze for steel, cast iron, cast steel and brass, copper and bronze.	6.0	1/4	2.27	5	BLU-42971016
				2.4	3/32			BLU-42174006
				3.2	1/8			BLU-42174008
				5.0	3/16			BLU-42174012
				6.0	1/4	4.54	10	BLU-42174016
Everdur 656	ERCuSi-A	Silicon bronze is copper alloyed with 1% to 3% silicon. Then about 1% iron, nickel, or manganese is added.	Very versatile welding alloy for steels, copper and copper alloys, galvanized steel and Everdur structure.	1.6	1/16	4.54	10	BLU-42175004
				2.4	3/32			BLU-42175006
				3.2	1/8			BLU-42175008

Note: Rod length = 914 mm (36") / 5 tubes of 4.54 kg (10 lb) or 5 tubes of 2.27 kg (5 lb) in 22.68 kg (50 lb) master box. Bare bronze rods require flux.

## Brazing

# BRAZING

## SIL-FOS BRAZING ALLOYS:

This group of alloys allows the joining of copper to copper without a flux and copper-based alloys (brass and bronze with a flux). Sil-Fos is the workhorse filler metal used in the refrigeration and air conditioning industries.

### FLUX SELECTION: THESE ALLOYS ARE SELF-FLUXING ON COPPER BUT HANDY FLUX IS NEEDED FOR BRASS

APPLICATION	NAME	AWS CLASS	COMMENTS	DIAMETER		PACKAGING		ITEM NUMBER
				MM	IN	KG	LB	
To join copper or brass with copper or brass	BraZing rod Sil-Fos	BCUP-5	Recommended for use where a close fit-up cannot be maintained and joint ductility is important.	1.6	1/16	3	6.6	HAN-71150W1503
				2.4	3/32	3	6.6	HAN-71150W2503
						10	22	HAN-71150W2510
						0.5	1.1	HAN-71150W2550
								HAN-K84151
	BraZing Rod Sil-Fos 15	BCUP-5	Best alloy for general copper-copper brazing in the Sil-Fos family. No separate flux is necessary. For brass application however, flux is recommended. Works well to bridge gaps, high joint ductility to best withstand the stresses inherent in refrigeration applications.	1.6	1/16	3	6.6	HAN-71150W3003
						10	22	HAN-71150W3010
						0.5	1.1	HAN-84152
	BraZing Rod Sil-Fos 6M	NO	Recommended for use where a close fit-up cannot be maintained.	3.2	1/8	3	6.6	HAN-71156W3003
	BraZing rod Sil-Fos 5	BCUP-3	Recommended for use where a close fit-up cannot be maintained.	1.6	1/16	10	22	HAN-71050W1510
				2.4	3/32	3	6.6	HAN-71050W2503
						10	22	HAN-71050W2510
						0.5	1.1	HAN-K84051
				3.2	1/8	10	22	HAN-71050W3010

# SILVER BRAZING

## HIGH SILVER BRAZING ALLOYS:

These high silver brazing alloys facilitate the joining of steel, brass, stainless steel, etc. They are used for refrigeration and other applications.

### FLUX SELECTION: HANDY FLUX

APPLICATION	NAME	AWS CLASS	COMMENTS	DIAMETER		PACKAGING		ITEM NUMBER
				MM	IN	KG	LB	
To join copper or brass with steel	BraZing Wire 560	BAG-7	Lowest temperature, Cadmium-free filler metal.	1.6	1/16	0.25	0.6	HAN-32560W1525
						1	2.2	HAN-32560W1501
						2	4.4	HAN-32560W1502
						0.25	0.6	HAN-K82562
	Flux coated BraZing rod 560	BAG-7	Lowest temperature, Cadmium-free filler metal.	1.6	1/16	0.114 (8 rods)	0.25 (8 rods)	HAN-32560W15FC
	BraZing Wire 452	BAG-36	General-purpose filler metal for joining ferrous, non-ferrous and dissimilar metals with large joint clearances.	1.6	1/16	1	2.2	HAN-32452W1501
				2.4	3/32	1	2.2	HAN-32452W2501
				1.6	1/16	0.25	0.6	HAN-K82455
	BraZing Wire 450	BAG-5	General-purpose filler metal for joining ferrous, non-ferrous and dissimilar metals with large joint clearances.	1.6	1/16	0.3	0.66	HAN-K82453
	BraZing Wire Easy-flo 45	BAG-1	Joining ferrous, non-ferrous and dissimilar metals with close joint clearances. Contains Cadmium.	1.6	1/16	2	4.4	HAN-32450W1502
						0.25	0.6	HAN-K81452
	Silver solder easy-flo 45	BAG-1	Joining ferrous, non-ferrous and dissimilar metals with close joint clearances. Contains Cadmium.	1.6	1/16	0.03	0.07	HAN-K81450
						0.25	0.6	HAN-31450W1525
						1	2.2	HAN-31450W1501
				2.4	3/32	2	4.4	HAN-31450W1502
						2	4.4	HAN-31450W2502
				3.2	1/8	2	4.4	HAN-31450W3002
				2.4	3/32	1	2.2	HAN-31450W2501
				0.8	1/32	0.25	0.6	HAN-31450W0725

## Brazing

# SOLDERING

## FLUX SELECTION: HANDY FLUX TYPE B-1

APPLICATION	NAME	AWS CLASS	COMMENTS	DIAMETER		PACKAGING		ITEM NUMBER
				MM	IN	KG	LB	
To join copper, brass or steel to stainless steel	Brazing wire 505	BAG-24	For 300 series stainless steel food handling equipment with close joint tolerances.	1.6	1/16	0.25	0.6	HAN-82525

## FLUX SELECTION: SELF-FLUXING

APPLICATION	NAME	COMMENTS	PACKAGING	ITEM NUMBER
To join aluminum to aluminum or copper	High temp solder fluxed cored rod AL 802	Low-temperature aluminum solder. Non-corrosive flux does not require removal after soldering.	28 g / 1 oz (Sold in tube of 6 rods)	HAN-AL802

FILLER METALS

# FLUX

is an all-purpose flux for use in brazing both ferrous and non-ferrous metals and alloys.

## FLUX SELECTION: HANDY FLUX TYPE A-1 AND HANDY FLUX TYPE B-1

NAME	COMMENTS	PACKAGING		ITEM NUMBER
		KG	LB	
Handy brazing flux	All purpose, low temperature flux for use in brazing both ferrous and nonferrous metals and alloys	2.27	5	HAN-73103
Handy brazing flux	All purpose, low temperature flux for use in brazing both ferrous and nonferrous metals and alloys	0.454	1	HAN-73104
Handy brazing flux	All purpose, low temperature flux for use in brazing both ferrous and nonferrous metals and alloys	0.227	0.5	HAN-73105
Flux brazing flux	All purpose, low temperature flux for use in brazing both ferrous and nonferrous metals and alloys	0.2	0.4	HAN-73200
Handy brazing flux, type A-1	For brazing aluminum bronze and other alloys containing small amounts of aluminum and/or titanium.	0.454	1	HAN-73284
Handy brazing flux, type B-1	For brazing high chromium stainless steel, tungsten and chromium carbides and molybdenum alloys	0.454	1	HAN-73233 B-1

## SAW - Submerged-Arc Welding

# BLUESHIELD SUBMERGED-ARC

For decades, we have contributed significantly to the development of submerged-arc welding techniques. Wherever submerged-arc welding procedures are used, Blueshield and Oerlikon are recognized for their high-quality products, supported by strong technical expertise.



## WIRES

NAME	AWS CLASS	CSA/CWB CLASS	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
					MM	IN	KG	LB		
LA 12K	EM12K	EM12K	Medium manganese, medium silicon, general purpose	Single-pass or multi-pass for high-strength and excellent impact properties. Used for pressure vessels, shipbuilding, structural members and sheet-metal work.	2.0	5/64	27.2	60	Coil	BLU-48970105
					2.4	3/32				BLU-48970106
					3.2	1/8				BLU-48970108
					4.0	5/32				BLU-48970110
					2.0	5/64	450	990	Drum	BLU-48970205
					2.4	3/32				BLU-48970206
					3.2	1/8				BLU-48970208
					4.0	5/32				BLU-48970210

Note: Please contact your local representative for a complete listing of the code requirements for our wires and fluxes.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	PACKAGING			ITEM NUMBER
						KG	LB		
LA 23	F7A0-EM12K	F49A2-EM12K	1-3 passes with single- or multi-wires	Bonded rutile flux B.I.= 0.4	High-speed fillet, excellent in root pass, lightly mill-scaled, rusty or oily material. Used for structural steelworks, beams, small tanks and pipes.	25	55	Polyethylene bag	BLU-50100101
LA 46	F7A4-EM12K	F49A4-EM12K	Single- and multi-pass with single- or multi-wires	Bonded semi-basic flux B.I.= 1.3	Good mechanical properties at low temperature. Used for boiler, pressure vessels, shipbuilding and piping.	25	55	Polyethylene bag	BLU-50100102
LA 59	F7A6-EM12K F7P6-EM12K	F49A6-EM12K F49P6-EM12K	Multi-pass with single- or multi-wires	Bonded basic flux B.I.= 2.1	Carbon and low-alloy steel with good impact values at low temperatures. Used for pressure vessels, offshore and heavy-boiler work.	25	55	Polyethylene bag	BLU-50100103
LA 100	E308L-E309L-E316L Stainless steel	E308L-E309L-E316L Stainless steel	Single- and multi-pass	Bonded semi-basic B.I.= 1.2	300 series austenitic stainless steels. Slightly additive in Cr. Good impact at -196°C = -320°F.	25	55	Paper bag with polyethylene film	BLU-50101010

Note: Please contact your local representative for a complete listing of the code requirements for our wires and fluxes.  
B.I. Basicity Index according to Boniszewski



## SAW - Submerged-Arc Welding

# OERLIKON SUBMERGED-ARC

We offer an extensive line of products for submerged-arc applications such as heavy equipment manufacturing, shipbuilding, structural steel erection, oil platforms, bridges, pipes, containers, heat regenerators, power plants and wind tower applications.



## WIRES

NAME	AWS CLASS	CSA/CWB CLASS	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
					MM	IN	KG	LB		
OE S2Mo	EA2	—	1/2% molybdenum Special purpose	Low-alloy steel with min 490 MPa (70 ksi) tensile and good stress relieved impact.	2.4	3/32	20	44	Coil	OER-48871424
					3.2	1/8	20	44	Coil	OER-48871430
					4.0	5/32	20	44	Coil	OER-48871440
OE SD3	EH12K	EH12K	High manganese High silicon Special purpose	Pressure vessels and offshore structures with high-strength deposit and good impact.	2.4	3/32	27.2	60	Coil	OER-48870324
					3.2	1/8	27.2	60	Coil	OER-48870332
					4.0	5/32	27.2	60	Coil	OER-48870340
OE S3NiMo-1	EG	EG	1% nickel 1/2% molybdenum	High-strength deposit and high impact (stress relieved).	2.4	3/32	27.2	60	Coil	OER-48873125
					3.2	1/8	27.2	60	Coil	OER-48873130
					4.0	5/32	27.2	60	Coil	OER-48873140
OE SD2 1 1/4Cr 1/2Mo	EB2	EB2	1 1/4 chrome 1/2 molybdenum	Similar low-alloy steel.	2.4	3/32	25	55	Coil	OER-48872124
					3.2	1/8	25	55	Coil	OER-48872132
					4.0	5/32	25	55	Coil	OER-48872140
OE S1 CrMo2	EB3	EB3	2 1/4 chrome 1% molybdenum	Similar low-alloy steel.	2.4	3/32	25	55	Coil	OER-48872224
					3.2	1/8	25	55	Coil	OER-48872232
					4.0	5/32	25	55	Coil	OER-48872240
OE S308L	ER308L	ER308L	Stainless steel 19% chrome 9% nickel	Low-carbon 308 type stainless for welding base metals 302, 304, 308, etc.	2.5	3/32	27.2	60	Coil	OER-66940825
					3.2	1/8	27.2	60	Coil	OER-66940832
OE S309L	ER309L	ER309L	Stainless steel 24% chrome 12% nickel	Low-carbon 309 type stainless for welding dissimilar steel and cladding on carbon steel.	2.5	3/32	27.2	60	Coil	OER-66940925
					3.2	1/8	27.2	60	Coil	OER-66940932
OE S316L	ER316L	ER316L	Stainless steel 19% Cr, 12% Ni, 3% Mo	Low-carbon 316 type stainless for welding similar base metals.	2.5	3/32	27.2	60	Coil	OER-66941625
					3.2	1/8	27.2	60	Coil	OER-66941632
OE S347	ER347	—	Stainless steel 19% Cr, 9% Ni, Nb stabilized	347 type stainless for welding similar base metals.	2.5	3/32	27.2	60	Coil	OER-66944725
					3.2	1/8	27.2	60	Coil	OER-66944732

Note: Please contact your local representative for a complete listing of the code requirements for our wires and fluxes.

FILLER  
METALS

## SAW - Submerged-Arc Welding

## FLUXES

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	PACKAGING		PACKAGING	ITEM NUMBER
						KG	LB		
OP 176	F7A2-EM12K*	F49A3-EM12K*	1-3 passes with single or multi-wires	Bonded rutile flux B.I.= 0.8	High-speed fillet, excellent in root pass, lightly mill-scaled, rusty or oily material. Used for structural steelworks, beams, small tanks and pipes.	25	55	Heavy-duty polythene bags	OER-50871764
OP 139	F7A2-EM12K	F49A3-EM12K*	Single- and multi-passes with single or multi-wires	Bonded semi-basic flux B.I.= 1.5	Good mechanicals properties at low temperature. Used for boiler, pressure vessels, shipbuilding and piping.	25	55	Heavy-duty polythene bags	OER-50871394
OP 121TT	F7A6-EM12K F7P6-EM12K	F49A6-EM12K* F49P6-EM12K	Multi-passes with single or multi-wires	Bonded fully-basic flux B.I.= 3.0	High-tensile and impact values. Used for pressure vessels, offshore and heavy-boiler work.	25	55	Heavy-duty polythene bags	OER-50871214
OP 33	E308L-E309L-E316L-ER347 Stainless steel	E308L-E309L-E316L-ER347 Stainless steel	Single- and multi-pass	Bonded basic flux B.I.= 1.8	For stabilized and non-stabilized stainless steels. Minimal chromium loss and very clean deposit.	35	77	Heavy-duty polythene bags	OER-50870334
OP 76	Stainless, Duplex and Nickel alloys	Stainless, Duplex and Nickel alloys	Single- and multi-pass	Bonded basic flux B.I.= 2.7	For stabilized and non-stabilized and duplex stainless steels as well as nickel-based wire.	35	77	Heavy-duty polythene bags	OER-50870764

Note: Please consult your local representative for a complete listing of the code requirements for our wires and fluxes.

\*With Blueshield LA 12K wire

B.I. Basicity Index according to Boniszewski



## PROVEN SOLUTIONS FOR AMBITIOUS TASKS

We invite you to take advantage of  
Air Liquide's and Oerlikon's expertise.

## Aluminum

# BLUESHIELD ALUMINUM

Blueshield Crystal aluminum wire and rods are manufactured to the highest quality standards and undergo unique testing methods in order to ensure maximum feedability and weld quality. Our Blueshield Crystal is your best choice to achieve the best possible welds: every time, every spool.



## BLUESHIELD ALUMINUM WIRE FOR GMAW (MIG)

NAME	AWS CLASS	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
			MM	IN	KG	LB		
CRYSTAL 4043	ER4043	Alloy 4043 is one of the most widely used general-purpose aluminum welding alloys containing silicon to lower the melting point and improve fluidity and wetting action. Blueshield Crystal 4043 produces a bright weld with very good appearance and offers excellent resistance to weld cracking.	0.8	0.030	0.45	1	Spool	BLU-20443108W
			0.9	0.035				BLU-20443109W
			1.2	3/64				BLU-20443112W
			0.9	0.035	9.1	20		BLU-20443809W
			1.2	3/64				BLU-20443812W
			1.6	1/16				BLU-20443816W
CRYSTAL 5356	ER5356	Alloy 5356 is the most popular of the high-magnesium welding filler metal alloys and is typically chosen for its relatively high strength and good feedability characteristics. Blueshield Crystal 5356 has high compatibility with many base metals and is suitable for many applications, but is not recommended for elevated temperature service above 65°C (150°F).	0.8	0.030	0.45	1	Spool	BLU-20456108W
			0.9	0.035				BLU-20456109W
			1.2	3/64				BLU-20456112W
			0.9	0.035	9.1	20		BLU-20456809W
			1.2	3/64				BLU-20456812W
			1.6	1/16				BLU-20456816W

Note: 4043 and 5356 grades are CWB certified to CSA.

Blueshield aluminum may meet code requirements other than those listed.

Please consult your local representative for a complete listing of the current code certifications of our electrodes.

FILLER  
METALS

## BLUESHIELD ALUMINUM ROD FOR GTAW (TIG)

NAME	AWS CLASS	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
			MM	IN	KG	LB		
CRYSTAL 4043	ER4043	Alloy 4043 is one of the most widely used general-purpose aluminum welding alloys containing silicon to lower the melting point and improve fluidity and wetting action. Blueshield Crystal 4043 produces a bright weld with very good appearance and offers excellent resistance to weld cracking.	1.6	1/16	4.5	10	Box	BLU-20343416T
			2.4	3/32				BLU-20343424T
			3.2	1/8				BLU-20343432T
CRYSTAL 5356	ER5356	Alloy 5356 is the most popular of the high-magnesium welding filler metal alloys and is typically chosen for its relatively high strength and good feedability characteristics. Blueshield Crystal 5356 has high compatibility with many base metals and is suitable for many applications, but is not recommended for elevated temperature service above 65°C (150°F).	1.6	1/16	4.5	10	Box	BLU-20356416T
			2.4	3/32				BLU-20356424T
			3.2	1/8				BLU-20356432T

Note: 4043 and 5356 grades are CWB certified to CSA.

Blueshield aluminum may meet code requirements other than those listed.

Please consult your local representative for a complete listing of the current code certifications of our electrodes.

## Stainless Steel

# BLUESHIELD SMAW STAINLESS CONSUMABLES

Blueshield 620, 622 and 624 stainless steel electrodes offer the same consistency in operator appeal, quality and performance the industry has come to expect. These electrodes are characterized by their distinctive smooth spray-type metal transfer, self-peeling slag, minimal spatter and superior weld bead profile for welding the most common grades of austenitic stainless steels.

NAME	AWS CLASS*	CSA/CWB CLASS*	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
<b>BLUESHIELD 620P-308L</b>	E308L-17	E308L-17	All	Rutile-Acid	Used to weld common "18-8" type austenitic stainless steels. e.g. ASTM A 240 types 302, 304/304L.	2.5	3/32	3 x 3.6	3 x 8.0	<b>BLU-10800825</b>
						3.2	1/8	3 x 4.1	3 x 9.0	<b>BLU-10800832</b>
						4.0	5/32	3 x 4.1	3 x 9.0	<b>BLU-10800840</b>
						5.0	3/16	3 x 4.5	3 x 10.0	<b>BLU-10800850</b>
<b>BLUESHIELD 622-316L</b>	E316L-17	E316L-17	All	Rutile-Acid	For welding corresponding steel grades ASTM 316/316L.	2.5	3/32	3 x 3.6	3 x 8.0	<b>BLU-10801625</b>
						3.2	1/8	3 x 4.1	3 x 9.0	<b>BLU-10801632</b>
						4.0	5/32	3 x 4.1	3 x 9.0	<b>BLU-10801640</b>
						5.0	3/16	3 x 4.5	3 x 10.0	<b>BLU-10801650</b>
<b>BLUESHIELD 624P-309L</b>	E309L-17	E309L-17	All	Rutile-Acid	Used to weld higher alloyed austenitic stainless steels or for dissimilar welding applications. e.g. carbon to stainless.	2.5	3/32	3 x 3.6	3 x 8.0	<b>BLU-10800925</b>
						3.2	1/8	3 x 4.1	3 x 9.0	<b>BLU-10800932</b>
						4.0	5/32	3 x 4.1	3 x 9.0	<b>BLU-10800940</b>
						5.0	3/16	3 x 4.5	3 x 10.0	<b>BLU-10800950</b>

\* Some products are also naval-approved. Contact your local representative for more information.



## Stainless Steel

# BLUESHIELD GTAW STAINLESS CONSUMABLES

All Blueshield 630 series GTAW (TIG) stainless steel consumables are laser imprinted with positive AWS identification and heat numbers to provide full product traceability for those demanding code-quality jobs. The standard packaging is convenient 4.5 kg / 10 lb tubes, with three tubes per master carton (13.6 kg / 30 lb).



NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
BLUESHIELD 630-308L	ER308L	ER308L	All	Solid	Used to weld common "18-8" type austenitic stainless steels.	1.6	1/16	3 x 4.5	3 x 10	BLU-10340816
						2.4	3/32			BLU-10340824
						3.2	1/8			BLU-10340832
BLUESHIELD 630-316L	ER316L	ER316L	All	Solid	For welding corresponding steel grades ASTM 316/316L.	1.6	1/16	3 x 4.5	3 x 10	BLU-10341616
						2.4	3/32			BLU-10341624
						3.2	1/8			BLU-10341632
BLUESHIELD 630-309L	ER309L	ER309L	All	Solid	For welding higher alloyed austenitic stainless steels or dissimilar welding applications e.g. carbon to stainless.	1.6	1/16	3 x 4.5	3 x 10	BLU-10340916
						2.4	3/32			BLU-10340924
						3.2	1/8			BLU-10340932

FILLER  
METALS



## Stainless Steel

# BLUESHIELD GMAW STAINLESS CONSUMABLES

Blueshield 640 series stainless steel wires are designed for those high-quality stainless welding jobs. All products are packaged on convenient plastic spools and Precision Level Wound (PLW) to provide the best feedability and weld quality possible.

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
BLUESHIELD 640-308L	ER308L	ER308L	All	Solid	Ideal for welding types 304L, 321 and 347 stainless steels.	0.8	0.030	15	33	BLU-10470808W
						0.9	0.035			BLU-10470809W
						1.14	0.045			BLU-10470812W
						1.6	0.062			BLU-10471816W
BLUESHIELD 640-308L HiSi	ER308LSi	ER308LSi	All	Solid	Used to weld equipment made with 304 and 304L stainless grades.	0.8	0.030	15	33	BLU-10470808SIW
						0.9	0.035			BLU-10470809SIW
						1.14	0.045			BLU-10470812SIW
						1.6	0.062			BLU-10470816SIW
BLUESHIELD 640-309L	ER309L	ER309L	All	Solid	Preferred for cladding over carbon or low alloy steels, as well as for dissimilar welding applications.	0.8	0.030	15	33	BLU-10470908W
						0.9	0.035			BLU-10470909W
						1.14	0.045			BLU-10470912W
						1.6	0.062			BLU-10470916W
BLUESHIELD 640-309L HiSi	ER309LSi	ER309LSi	All	Solid	Similar chemical composition as 309L, with higher silicon content to improve bead appearance.	0.8	0.030	15	33	BLU-10470908SIW
						0.9	0.035			BLU-10470909SIW
						1.14	0.045			BLU-10470912SIW
						1.6	0.062			BLU-10470916SIW
BLUESHIELD 640-316L	ER316L	ER316L	All	Solid	Primarily used for welding low carbon molybdenum-bearing austenitic alloys.	0.8	0.030	15	33	BLU-10471608W
						0.9	0.035			BLU-10471609W
						1.14	0.045			BLU-10471612W
						1.6	0.062			BLU-10471616W
BLUESHIELD 640-316L HiSi	ER316LSi	ER316LSi	All	Solid	Similar chemical composition as 316L, with higher silicon content to improve bead appearance.	0.8	0.030	15	33	BLU-10471608SIW
						0.9	0.035			BLU-10471609SIW
						1.14	0.045			BLU-10471612SIW
						1.6	0.062			BLU-10471616SIW

## Stainless Steel

# BLUESHIELD FCAW STAINLESS CONSUMABLES

Blueshield 650F, 652F and 654F stainless steel wires offer the same consistency in operator appeal, quality and performance the industry has come to expect of our Blueshield carbon steel FCAW wires. These wires offer a distinctive, smooth, spray-type metal transfer, self-peeling slag, minimal spatter and superior weld bead profile.

Blueshield 650F, 652F and 654F stainless steel wires offer the same consistency in operator appeal, quality and performance the industry has come to expect of our Blueshield carbon steel FCAW wires. These wires offer a distinctive, smooth, spray-type metal transfer, self-peeling slag, minimal spatter and superior weld bead profile.

Blueshield 650P, 652P and 654P stainless steel wires offer **enhanced** all-position welding characteristics, specifically designed for vertical-up and overhead welding. These wires are characterized by their fast-freezing slag, spray-type metal transfer, easy-slag removal, minimal spatter and a smooth flat bead profile when welding in the vertical-up and overhead positions.

NAME	AWS CLASS*	CSA/CWB CLASS*	POSITION	TYPE	APPLICATION	DIAMETER		PACKAGING		ITEM NUMBER
						MM	IN	KG	LB	
BLUESHIELD 650F-308L	E308LT0-1 E308LT0-4	E308LT0-1 E308LT0-4	Flat	Rutile	Used to weld common "18-8" type austenitic stainless steels.	1.2	0.045	12.7	28	BLU-10900812F
						1.6	0.062			BLU-10900816F
BLUESHIELD 650P-308L	E308LT1-1 E308LT1-4	E308LT1-1 E308LT1-4	All	Rutile	Vertical-up and overhead welding of grades 304 and 304L.	0.9	0.035	15	33	BLU-10900809P
						1.2	0.045			BLU-10900812P
						1.6	0.062			BLU-10900816P
BLUESHIELD 652F-316L	E316LT0-1 E316LT0-4	E316LT0-1 E316LT0-4	Flat	Rutile	For welding corresponding steel grades ASTM 316/316L.	1.2	0.045	15	33	BLU-10901612F
						1.6	0.062			BLU-10901616F
BLUESHIELD 652P-316L	E316LT1-1 E316LT1-4	E316LT1-1 E316LT1-4	All	Rutile	Vertical-up and overhead welding of grades 316 and 316L.	0.9	0.035	15	33	BLU-10901609P
						1.2	0.045			BLU-10901612P
						1.6	0.062			BLU-10901616P
BLUESHIELD 654F-309L	E309LT0-1 E309LT0-4	E309LT0-1 E309LT0-4	Flat	Rutile	For welding higher alloyed austenitic stainless steels or dissimilar welding applications.	1.2	0.045	15	33	BLU-10900912F
						1.6	0.062			BLU-10900916F
BLUESHIELD 654P-309L	E309LT1-1 E309LT1-4	E309LT1-1 E309LT1-4	All	Rutile	For welding higher alloyed austenitic stainless steels or dissimilar welding applications.	0.9	0.035	15	33	BLU-10900909P
						1.2	0.045			BLU-10900912P
						1.6	0.062			BLU-10900916P

\* Some products are also naval-approved. Contact your local representative for more information.

FILLER  
METALS

## Stainless Steel

# OERLIKON SUBMERGED-ARC STAINLESS STEEL WIRES

NAME	AWS CLASS	CSA/CWB CLASS	TYPE	APPLICATION	DIAMETER		PACKAGING			ITEM NUMBER
					MM	IN	KG	LB		
OE S308L	ER308L	ER308L	Stainless steel 19% chrome 9% nickel	Low-carbon 308 type stainless for welding base metals 302, 304, 308, etc.	2.5	3/32	27.2	60	Coil	OER-66940825
					3.2	1/8	27.2	60	Coil	OER-66940832
OE S309L	ER309L	ER309L	Stainless steel 24% chrome 12% nickel	Low-carbon 309 type stainless for welding dissimilar steel and cladding on carbon steel.	2.5	3/32	27.2	60	Coil	OER-66940925
					3.2	1/8	27.2	60	Coil	OER-66940932
OE S316L	ER316L	ER316L	Stainless steel 19% Cr, 12% Ni, 3% Mo	Low-carbon 316 type stainless for welding similar base metals.	2.5	3/32	27.2	60	Coil	OER-66941625
					3.2	1/8	27.2	60	Coil	OER-66941632
OE S347	ER347	—	Stainless steel 19% Cr, 9% Ni, Nb stabilized	347 type stainless for welding similar base metals.	2.5	3/32	27.2	60	Coil	OER-66944725
					3.2	1/8	27.2	60	Coil	OER-66944732

Note: Please contact your local representative for a complete listing of the code requirements for our wire and flux.  
Some diameters may not be in stock; please contact your local representative.

# OERLIKON SUBMERGED-ARC STAINLESS STEEL FLUXES

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	PACKAGING			ITEM NUMBER
						KG	LB		
OP 33	E308L-E309L-E316L-ER347 Stainless steel	E308L-E309L-E316L-ER347 Stainless steel	Single- and multi-pass	Bonded basic flux B.I.= 1.8	For stabilized and non-stabilized stainless steels. Minimal chromium loss and very clean deposit.	35	77	Heavy-duty polythene bags	OER-50870334
OP 76	Stainless, Duplex and Nickel alloys	Stainless, Duplex and Nickel alloys	Single- and multi-pass	Bonded basic flux B.I.= 2.7	For stabilized and non-stabilized and duplex stainless steels as well as nickel-based wire.	35	77	Heavy-duty polythene bags	OER-50870764

# BLUESHIELD SUBMERGED-ARC STAINLESS STEEL FLUXES

NAME	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	PACKAGING			ITEM NUMBER
						KG	LB		
LA 100	E308L-E309L-E316L Stainless steel	E308L-E309L-E316L Stainless steel	Single- and multi-pass	Bonded semi-basic B.I.= 1.2	300 series austenitic stainless steels. Slightly additive in Cr. Good impact at -196°C = -320°F.	25	55	Paper bag with polyethylene film	BLU-50101010

## Packaging Information

FILLER METAL GROUP	PRODUCT TITLE	PALLET WEIGHT		UNIT PER PALLET
		DIAMETER OR PACKAGE TYPE	PALLET WEIGHT	
SMAW	Blueshield Mild-Steel Electrodes (All except LA 7024 5.0 and 6.0 mm)	2.5 mm	900 kg (1980 lb)	90 master box (4 small boxes of 2.5 kg / 5.5 lb)
		3.2, 4.0, 5.0 mm	1000 kg (2200 lb)	50 master box (4 small boxes of 5 kg / 11 lb)
		6.0 mm	900 kg (1980 lb)	50 master box (4 small boxes of 4.5 kg / 10 lb)
	Blueshield LA 7024	5.0, 6.0 mm	900 kg (1980 lb)	50 master box (4 small boxes of 4.5 kg / 10 lb)
	Blueshield Low-Hydrogen Electrodes and Low-Alloy Electrodes (All except LA 7028)	2.5 mm	900 kg (1980 lb)	90 master box (4 small boxes of 2.5 kg / 5.5 lb)
		3.2, 4.0, 5.0, 6.0 mm	1000 kg (2200 lb)	50 master box (4 small boxes of 5 kg / 11 lb)
	Blueshield LA 7028	3.2, 4.0 mm	900 kg (1980 lb)	50 master box (4 small boxes of 4.5 kg / 10 lb)
		5.0 mm	800 kg (1760 lb)	50 master box (4 small boxes of 4 kg / 8.8 lb)
	<b>PALLET SIZE:</b> 300 mm (12") length: 864 x 1067 mm (34" x 42") 350 mm (14") length: 787 x 991 mm (31" x 39") 450 mm (18") length: 864 x 1067 mm (34" x 42")			
GMAW	LA S-3 / LA S-6	All 20 kg (44 lb) spool	1080 kg (2380.9 lb)	54 x 20 kg (44 lb) spool
FCAW / MCAW	All Products	15 kg (33 lb) spool	810 kg (1785.7 lb)	54 x 15 kg (33 lb) spool
		20.4 kg (45 lb) spool	1101.6 kg (2428.6 lb)	54 x 20.4 kg (45 lb) spool
		27.2 kg (60 lb) coil	761.6 kg (1679 lb)	28 x 27.2 kg (60 lb) coil
GTAW and Rods	Blueshield Gas-welding and GTAW Mild-Steel Rods	All	454 kg (1000 lb)	20 master box (5 small tubes of 4.5 kg / 10 lb)
	Blueshield Brazing-Copper Based Rods	All (Except below)	454 kg (1000 lb)	20 master box (10 small tubes of 2.27 kg / 5 lb)
		FL Bronze (Bare) 6.0 mm	454 kg (1000 lb)	20 master box (5 small tubes of 4.54 kg / 10 lb)
SAW	Blueshield Submerged-Arc Wires	All	762 kg (1680 lb)	28 x 27.2 kg (60 lb) coil
			700 kg (1540 lb)	2 x 350 kg (770 lb) drum
	Blueshield Submerged-Arc Fluxes	N/A	900 kg (1980 lb)	36 x 25 kg (55 lb) plastic bags
	Oerlikon Submerged-Arc Wires	OE S2, OE S1, OE 13K and Stainless	762 kg (1676 lb)	28 x 27.2 kg (60 lb) coil
			700 kg (1540 lb)	2 x 350 kg (770 lb) drum
		OE S2Mo, OE SD3,	1000 kg (2200 lb)	50 x 20 kg (44 lb) coil
		OE NiMo1, Low Alloy	1000 kg (2200 lb)	40 x 25 kg (55 lb) coil
	Oerlikon Submerged-Arc Fluxes	All except below	1000 kg (2200 lb)	40 x 25 kg (55 lb) plastic bags
		ALCROMO F537	1000 kg (2200 lb)	25 x 40 kg (88 lb) plastic bags
		OP33 and OP76	980 kg (2156 lb)	28 x 35 kg (77 lb) plastic bags
Aluminum	Blueshield Crystal 4043 and 5356	0.45 kg (1 lb) spool	900 kg (2000 lb)	100 master box (20 spools of 0.45 kg / 1 lb)
		9.1 kg (20 lb) spool	737 kg (1620 lb)	81 x 9.1 kg (20 lb) spool
		4.5 kg (10 lb) tubes	720 kg (1600 lb)	160 x 4.5 kg (10 lb) tubes
	Blueshield Crystal 4047	7.3 kg (16 lb) spool	591 kg (1296 lb)	81 x 7.3 kg (16 lb) spool





# WELDING EQUIPMENT



## Hypertherm

Plasma Cutting Equipment

2

## Victor Technologies

Plasma Cutting Equipment  
Multi Process Welding Systems

6

## Miller

GMAW Welding Equipment (MIG)  
GTAW Welding Equipment (TIG)  
SMAW Welding Equipment (Stick)  
Multi Process Welding System  
Engine-Driven Welding Equipment  
Wire Feeders  
Fume Extraction

13

17  
22  
24  
28  
34  
38

## Lincoln Electric

GMAW Welding Equipment (MIG)  
GTAW Welding Equipment (TIG)  
SMAW Welding Equipment (Stick)  
Multi Process Welding System  
Engine-Driven Welding Equipment

39


41  
43  
44  
44



### Plasma Cutting Equipment

## powermax<sup>30</sup>XP

+ Input     + Recommended 10 mm (3/8")  
+ Severance 16 mm (5/8")

+ Output 

ITEM NUMBER	HYP-088079
Input Current @ 3.8 kW	120-240 V, 1-PH, 25-18.8 A
Output Current	15 - 30 A
Rated Output Voltage	125 VDC
Duty cycle @ 40° C	35%, 240 V 20%, 120 V
Open circuit voltage (OCV)	256 VDC
Dimensions (H x W x D)	305 x 168 x 356 mm (12 x 6.6 x 14")
Weight With 4.5m Torch	9.7 kg (21.4 lb)
Includes	Standard system includes: Power supply, Duramax LT hand torch with 4.5 m (15') lead, work cable 4.5 m (15'), starter consumable kit, 240 V/20 A plug with adapters, plastic carry case, carrying strap, leather gloves and shade 5 glasses.

#### Optional Accessories

HYP-127102 Plasma Cutting Guide - Basic	HYP-127239 Face Shield Shade 6
HYP-128647 Air Filtering Unit	HYP-027668 Plasma Cutting Guide - Deluxe
HYP-127144 System Dust Cover	



HYP-088079

### CONSUMABLE KIT FOR POWERMAX 30XP

#### INCLUDES

6 Electrodes • 3 Standard Nozzles • 3 FineCut Nozzles • 1 FineCut Deflector  
• 1 Shield • 1 Retaining Cap • 1 Swirl Ring



HYP-851420

## powermax<sup>45</sup>

+ Input     + Recommended 12 mm (1/2")  
+ Severance 25 mm (1")

+ Output 

ITEM NUMBER	HYP-088016
Input Current @ 5.95 kW	200/230 V, 1-PH, 34/28 A
Output Current	20 - 45 A
Rated Output Voltage	132 VDC
Duty cycle @ 40° C	50% @ 45 A, 60% @ 41 A, 100% @ 32 A
Open circuit voltage (OCV)	275 VDC
Dimensions (H x W x D)	426 x 172 x 348 mm (16.75 x 6.75 x 13.7")
Weight with 6.1 m (20') torch	17 kg (37 lb)
Includes	Power supply, T45v hand torch with 6 m (20') leads, starter consumable kit, 6 m (20') work cable with clamp and carry strap

#### Optional Accessories

HYP-128647 Air Filtering Unit	HYP-127219 System Dust Cover
HYP-128658 Hand Gouging Heat Shield	HYP-027668 Plasma Cutting Guide - Deluxe
HYP-024548 Leather Torch Sheathing	



HYP-088016

### CONSUMABLE KIT FOR POWERMAX 45

#### INCLUDES

7 Electrode • 5 Nozzle-Shielded • 1 Nozzle-Gouging • 1 Nozzle-Unshielded • 1 Shield-Shielded  
• 1 Deflector-Unshielded • 1 Shield-Gouging • 1 Swirl Ring • 1 Retaining Cap

#### FREE

2 Hypertherm Stickers • 1 Cutting Techniques



HYP-850827



### Plasma Cutting Equipment

## powermax 65

- + Input     + Recommended 20 mm (3/4")  
+ Severance 32 mm (1-1/4")
- + Output 

ITEM NUMBER	HYP-083270
Input Current @ 9 kW	200/208/240/480 V, 1-PH, 52/50/44/22 A 200/208/240/480/600 V, 3-PH, 32/31/27/13/13 A
Output Current	20 - 65 A
Rated Output Voltage	139 VDC
Duty cycle @ 40° C	50% @ 65 A, 230 - 600 V, 1/3-PH 40% @ 65 A, 200 - 208 V, 1/3-PH 100% @ 46 A, 230 - 600 V, 1/3-PH
Open circuit voltage (OCV)	295 VDC
Dimensions (H x W x D)	455 x 234 x 500 mm (17.9 x 9.2 x 19.7")
Weight with 7.6 m (25') torch	29 kg (64 lb)
Includes	Power supply, Duramax hand torch with 7.6 m (25') lead, hand clamp with 7.6 m (25') lead, and starter consumable kit.

#### Optional Accessories

HYP-127102 Plasma Cutting Guide - Basic	HYP-229370 Wheel Kit
HYP-024877 Torch Lead Cover, Black	HYP-127301 System Storage Dust Cover
HYP-027668 Plasma Cutting Guide - Deluxe	HYP-228570 Eliminator Filter and Cover



HYP-083270

### CONSUMABLE KIT FOR POWERMAX 65

#### INCLUDES

- 1 Swirl Ring 45/65/85 A • 1 Swirl Ring 45 A Fine Cut • 8 Electrode 45/65/85 A • 2 Nozzle 65 A
- 2 Nozzle 45 A • 2 Nozzle 45 A Fine Cut • 2 Nozzle 65/85 A Gouging • 1 Retaining Cap 45/65/85 A
- 1 Shield 45/65/85 A Drag-cutting • 1 Shield 65/85 A Gouging • 1 Deflector 45 A Fine Cut Handheld

#### FREE




- 1 Silicone Lubricant • 5 O-Rings • 1 Reference Guide • 2 Hypertherm Stickers



HYP-850945

WELDING  
EQUIPMENT

## powermax 85

- + Input     + Recommended 25 mm (1")  
+ Severance 38 mm (1-1/2")
- + Output 

ITEM NUMBER	HYP-087108
Input Current @ 12.2 kW	200/208/240/480 V, 1-PH, 70/68/58/29 A 200/208/240/480/600 V, 3-PH, 42/40/35/18/17 A
Output Current	25 - 85 A
Rated Output Voltage	143 VDC
Duty cycle @ 40° C	60% @ 85 A, 230 - 600 V, 3-PH 60% @ 85 A, 480 V, 1-PH 50% @ 85 A, 240 V, 1-PH 50% @ 85 A, 200 - 208 V, 3-PH 40% @ 85 A, 200 - 208 V, 1-PH 100% @ 66 A, 230 - 600 V, 1/3-PH
Open circuit voltage (OCV)	305 VDC
Dimensions (H x W x D)	455 x 234 x 500 mm (17.9 x 9.2 x 19.7")
Weight with 7.6 m (25') torch	32 kg (71 lb)
Includes	Power supply, Duramax hand torch with 7.6 m (25') lead, hand clamp with 7.6 m (25') lead, and starter consumable kit.

#### Optional Accessories

HYP-127102 Plasma Cutting Guide - Basic	HYP-229370 Wheel Kit
HYP-024877 Torch Lead Cover, Black	HYP-127301 System Storage Dust Cover
HYP-027668 Plasma Cutting Guide - Deluxe	HYP-228570 Eliminator Filter and Cover



HYP-087108

### CONSUMABLE KIT FOR POWERMAX 85

#### INCLUDES

- 1 Swirl Ring 45/65/85 A • 1 Swirl Ring 45 A Fine Cut • 9 Electrode 45/65/85 A • 3 Nozzle 85 A • 2 Nozzle 65 A • 1 Nozzle 45 A • 2 Nozzle 45 A Fine Cut • 1 Nozzle 65/85 A Gouging • 1 Retaining Cap 45/65/85 A • 1 Shield 45/65/85 A Drag-cutting • 1 Shield 65/85 A Gouging • 1 Deflector 45 A Fine Cut Handheld

#### FREE

- 1 Silicone Lubricant • 5 O-Rings • 1 Reference Guide • 2 Hypertherm Stickers



HYP-850969



### Plasma Cutting & Gouging Equipment

ALSO AVAILABLE: Powermax 105 all-in-one kit HYP-850993

## powermax105

- + Input + Recommended 32 mm (1 1/4")  
+ Severance 50 mm (2")
- + Output

ITEM NUMBER	HYP-059374
Input Current @ 21.9 kW	200/208/240/380/400/480/600 V, 58/56/49/28/25/22 A
Output Current	30-105 A
Duty cycle @ 40° C	200/208/240/480/600 V, 3-PH, 58/56/49/25/22 A 50% @ 105 A, 200 V, 3-PH 80% @ 105 A, 480 – 600 V, 3-PH 100% @ 94 A, 480 – 600 V, 3-PH 100% @ 88 A, 240 V, 3-PH 100% @ 74 A, 200 V, 3-PH
Rated Output Voltage	160 VDC
Dimensions (H x W x D)	508 x 274 x 592 mm (20 x 10.8 x 23.3")
Weight with 7.6 m (25') torch	45 kg (100 lb)
Recommended gas inlet flow rate / pressure	Cutting: 217 l/min (460 scfh, 7.7 scfm) @ 5.9 bar (85 psi) Gouging: 227 l/min (480 scfh, 8.0 scfm) @ 4.8 bar (70 psi)
Open circuit voltage (OCV)	300 VDC
Includes	Power supply, Duramax hand torch with 7.6 m (25') lead, hand clamp with 7.6 m (25') lead, and starter consumable kit.

#### Optional Accessories

HYP-024877 Torch Lead Cover, Black	HYP-229467 Wheel Kit
HYP-127360 System Storage Dust Cover	HYP-027668 Plasma Cutting Guide - Deluxe
HYP-228890 Eliminator Filter and Cover	



HYP-059374

### CONSUMABLE KIT FOR POWERMAX 105

#### INCLUDES

- 9 Electrodes • 6 Standard Nozzles • 1 FineCut Nozzle • 1 FineCut Deflector
- 3 Shields • 1 Retaining Cap • 3 Swirl Rings



HYP-850993

## powermax125

- + Input + Recommended 38 mm (1 1/2")  
+ Severance 57 mm (2 1/4")
- + Output

ITEM NUMBER	HYP-059546
Input Current @ 21.9 kW	300/400/480/600 V, 38/36/31/24 A
Output Current	30-125 A
Duty cycle @ 40° C	100% @ 125 A
Rated Output Voltage	175 VDC
Dimensions (H x W x D)	592 x 274 x 508 mm (23.3 x 10.8 x 20")
Weight with 7.6 m (25') torch	480 V, 47.9 kg (105.7 lb)
Recommended gas inlet flow rate / pressure	Cutting: 260 l/min (550 scfh) @ 5.9 bar (85 psi) Gouging: 212 l/min (480 scfh) @ 4.1 bar (60 psi)
Open circuit voltage (OCV)	400/600 V CSA, 320 VDC
Includes	Power supply, Duramax hand torch with 7.6 m (25') lead, hand clamp with 7.6 m (25') lead, and starter consumable kit.

#### Optional Accessories

HYP-011092 Replacement Filter Element for Eliminator	HYP-127360 System Storage Dust Cover
HYP-229570 Gantry Kit	HYP-228890 Eliminator Filter and Cover
HYP-024877 Torch Lead Cover, Black	HYP-229467 Wheel Kit



HYP-059546

### CONSUMABLE KIT FOR POWERMAX 125

#### INCLUDES

- 6 Electrodes • 4 Standard Nozzles • 1 FineCut Nozzle • 4 Shields
- 1 Retaining Cap • 1 Swirl Rings



HYP-851430





### Gouging Equipment

## MAXPRO200®

+ Input   

+ Output 

ITEM NUMBER	HYP-078617
Input Voltage	200/208 VAC, 3-PH, 50 Hz, 108/104 A
	220 VAC, 3-PH, 50 – 60 Hz, 98 A
	240 VAC, 3-PH, 60 Hz, 90 A
	380 VAC, 3-PH, 50 Hz, 57 A
	400 VAC, CE, 3-PH, 50 – 60 Hz, 54 A
	415 VAC, CE, 3-PH, 50 Hz, 52 A
	440 VAC, 3-PH, 50 – 60 Hz, 49 A
	480 VAC, 3-PH, 60 Hz, 45 A
Output Voltage	* 600 VAC, 3-PH, 60 Hz, 36 A
	50 - 165 VDC
Max. Output Current	200 A
Duty cycle @ 40° C	100% @ 33 kW, at 40° C (104° F)
Max. OCV	360 VDC
Dimensions	102 cm (40.14") H, 69 cm (27.12") W, 105 cm (41.23") L
Weight	335 kg (740 lb)



HYP-078617

#### Handheld Gouging

##### Virtually dross-free cutting capacity

- Mild steel 20 mm (3/4")

##### Production pierce capacity

- Mild steel 32 mm (1-1/4")
- Stainless steel 25 mm (1")

##### Severance

- Mild steel 75 mm (3")
- Stainless steel 64 mm (2-1/2")

**Bevel - 200 amp consumables support  
45° bevel capability**





## Plasma Cutting Equipment

# CUTMASTER 42

- + Input + Maximum Cutting Capacity 16 mm (5/8")
- + Output

The all-new THERMAL DYNAMICS® TRUE™ Series CUTMASTER® 42 is one of the most affordable, highest quality 1/4" (6 mm) plasma systems on the market.

**Applications include:** Auto Body / Marine Repair • Plumbing & HVAC • Home Shop • Metal Building & Roofing Construction • Rental Fleets

ITEM NUMBER	THD-142007
Max. Amperage Output	27A @ 120V 40A @ 230V
Output Power	3.8 kW
Recommended Cut	6 mm (1/4") @ 120V 9.5 mm (3/8") @ 230V
Max. Cut	15 mm (5/8") @ 120V 22.2 mm (7/8") @ 230V
Pierce Rating	6 mm (1/4") @ 120V 9.5 mm (3/8") @ 230V
Duty cycle @ 40° C	40% @ 40A @ 230V
Amperage Draw	29A @ 120V 15A @ 230V
Dimensions (H x W x D)	228 mm (9") x 117 mm (7") x 470 mm (18.5")
Weight	11.8 kg (26 lb)
Warranty (Parts & Labor)	4 years



THD-142007

## TORCH SPECIFICATIONS

**Torch Model:** SL40™  
**Automated & Mechanized:** ---  
**Air Pressure:** 75 psi (5.2 bar)  
**Flow:** 3.2 cfm (91 l/m)  
**Warranty (Parts & Labor):** 1 Year

 WELDING  
EQUIPMENT

# CUTMASTER 52

- + Input + Output
- + Maximum Cutting Capacity 28.5 mm (1 1/8")

The CUTMASTER® 52 is the most powerful and lightest weight 1/2" (12 mm) machine on the market today. The CUTMASTER TRUE™ Series are the only systems that offer the precision of the TRUE Cut Drag Tip Series™.

**Applications include:** Maintenance / Repair • Construction • Fabrication

ITEM NUMBER	THD-151305
Max. Amperage Output	60A
Output Power	6.2 kW
Recommended Cut	12 mm (1/2")
Max. Cut	30 mm (1 1/8")
Pierce Rating	12 mm (1/2")
Duty cycle @ 40° C	40% @ 60A 60% @ 55A 100% @ 50A
Amperage Draw	45A @ 230V, 1 ph 24A @ 230V, 3 ph 16A @ 460V, 3 ph
Dimensions (H x W x D)	381 mm (15") x 305 mm (12") x 610 mm (24")
Weight	19.5 kg (43 lb)
Warranty (Parts & Labor)	4 years



THD-151305

## TORCH SPECIFICATIONS

**Torch Model:** Hand SL60®, 75 deg. head  
**Automated & Mechanized:** SL100®, 180 deg. head  
**Air Pressure:** 75 psi (5.2 bar)  
**Flow:** 6.7 cfm (190 l/m)  
**Warranty (Parts & Labor):** 1 Year



## Plasma Cutting Equipment

# CUTMASTER 82

+ Input + Output

+ Maximum Cutting Capacity 38 mm (1 1/2")

The CUTMASTER® 82 weighs in at a mere 43 lbs. (19.5 kg) almost 50% less than its leading competitor, while still offering superior cutting power.

**Application includes:** Heavy Fabrication • Manufacturing • Contractors

ITEM NUMBER	THD-111305
Max. Amperage Output	80A
Output Power	9 kW
Recommended Cut	20 mm (3/4")
Max. Cut	40 mm (1 1/2")
Pierce Rating	15 mm (5/8")
Duty cycle @ 40° C	40% @ 80A 60% @ 65A 100% @ 55A
Amperage Draw	72A @ 230V, 1 ph 39A @ 230V, 3 ph 21A @ 460V, 3 ph
Dimensions (H x W x D)	381 mm (15") x 305 mm (12") x 610 mm (24")
Weight	28.1 kg (62 lb)
Warranty (Parts & Labor)	4 years



THD-111305

## TORCH SPECIFICATIONS

**Torch Model:** Hand SL60®, 75 deg. head  
**Automated & Mechanized:** SL100®, 180 deg. head  
**Air Pressure:** 70 psi (4.8 bar)  
**Flow:** 6.7 cfm (190 l/m)  
**Warranty (Parts & Labor):** 1 Year

# CUTMASTER 102

+ Input + Output

+ Maximum Cutting Capacity 44 mm (1 3/4")

The CUTMASTER® 102 is the fastest cutting 1" (25 mm) machine on the market today. This unit's light weight compact design combined with multiple voltage selection makes it the most portable and powerful cutting machine available.

**Applications include:** Heavy Fabrication • Manufacturing

ITEM NUMBER	THD-113305
Max. Amperage Output	100A
Output Power	12 kW
Recommended Cut	25 mm (1")
Max. Cut	45 mm (1 3/4")
Pierce Rating	20 mm (3/4")
Duty cycle @ 40° C	60% @ 100A 80% @ 80A 100% @ 70A
Amperage Draw	95A @ 230V, 1 ph 45A @ 230V, 3 ph 29A @ 460V, 3 ph
Dimensions (H x W x D)	381 mm (15") x 305 mm (12") x 762 mm (30")
Weight	28.1 kg (62 lb)
Warranty (Parts & Labor)	4 years



THD-113305

## TORCH SPECIFICATIONS

**Torch Model:** Hand, SL100®, 75 deg. head  
**Automated & Mechanized:** Automated & Mechanized SL100®, 180 deg. head  
**Air Pressure:** 70 psi (4.8 bar)  
**Flow:** 7.5 cfm (212 l/m)  
**Warranty (Parts & Labor):** 1 Year



## Plasma Cutting Equipment

# CUTMASTER 152

+ Input

+ Output

+ Maximum Cutting Capacity 51 mm (2")

The CUTMASTER® 152 is the heavy weight of hand held cutting systems. This unit comes in a compact-light weight package, but don't let that fool you. It offers enough cutting power to cut 50 mm (2") material.

**Applications include:** Heavy Fabrication • Manufacturing

ITEM NUMBER	THD-17305
Max. Amperage Output	120A
Output Power	15.4 kW
Recommended Cut	30 mm (1 1/4")
Max. Cut	50 mm (2")
Pierce Rating	25 mm (1")
Duty cycle @ 40° C	80% @ 120A 100% @ 110A
Amperage Draw	120A @ 230V, 1 ph 56A @ 230V, 3 ph 37A @ 460V, 3 ph
Dimensions (H x W x D)	381 mm (15") x 305 mm (12") x 762 mm (30")
Weight	28.1 kg (62 lb)
Warranty (Parts & Labor)	4 years



THD-17305

## TORCH SPECIFICATIONS

**Torch Model:** Hand, SL100®, 75 deg. head

**Automated & Mechanized:** Automated & Mechanized SL100®, 180 deg. head

**Air Pressure:** 70 psi (4.8 bar)

**Flow:** 7.5 cfm (212 l/m)

**Warranty (Parts & Labor):** 1 Year



Multi Process Welding System

## FABRICATOR 141i SYSTEM

New standard for portable welding equipment delivering 3-in-1 MIG, STICK, and TIG capability from one integrated portable system.

**Applications include:** Home Hobbyists (DIY) • Auto Repair & Customization  
• Farms & Ranches • Maintenance & Repair • Sheet Metal & Light Fabrication  
• On-Site & Portable Welding Applications

ITEM NUMBER	THA-W1003141
Process(es)	MIG (GMAW), Flux Cored (FCAW), Lift TIG (GTAW), Stick (SMAW)
Rated Output	MIG: 140A / 19V @ 15% Duty Cycle Welding output: 90A / 18.5V @ 20% Duty Cycle
Max. OCV	53V DC
Amperage Range	10 - 140 Amp
Wire Feed Speed	90 - 390 IPM (2.3 - 9.9 m/min)
Weight	14.6 kg (32.2 lb)



THA-W1003141

**ALSO AVAILABLE WITH UTILITY CART**

THA-W1003142

## FABRICATOR 181i SYSTEM

The new TWECO® 181i is the only product of its kind. It features MIG, Stick and TIG welding capabilities – complete in one integrated portable package. It's the ultimate compact multiprocess welding system that has changed the game. This portable powerhouse is designed to take on a wide range of MIG, Stick and TIG applications. It's the ideal choice for the light fabrication of steel, stainless steel and aluminum (MIG) across a wide range of user applications.

**Applications include:** Automotive Repair & Customization • Farms & Ranches  
• Training Institutions • Maintenance & Repair • Sheet Metal & Light Fabrication  
• On-site & Portable Welding Applications • Home Hobbyists (DIY)

ITEM NUMBER	THA-W1003181
Process(es)	MIG (GMAW), Flux Cored (FCAW), Lift TIG (GTAW), Stick (SMAW)
Rated Output	180A/230V @ 20% Duty Cycle 145A/22.5V @ 30% Duty Cycle
Max. Open Circuit Voltage	62V DC
Amperage Range	10-180 Amp
Wire Feed Speed	100-650 ipm (2.5 - 17.7 m/min)
Weight	14.6 kg (32.2 lb)



THA-W1003181

**ALSO AVAILABLE WITH UTILITY CART**

THA-W1003182





Multi Process Welding System

## FABRICATOR 211i SYSTEM

The new Tweco® 211i is the only product of its kind. It features MIG, Stick and TIG welding capabilities – complete in one integrated portable package. It's the ultimate compact multiprocess welding system that has changed the game. This portable powerhouse is designed to take on a wide range of MIG, Stick and TIG applications.

**Applications include:** Automotive Repair & Customization • Farms & Ranches • Training Institutions • Maintenance & Repair • Sheet Metal & Light Fabrication • On-site & Portable Welding Applications • Home Hobbyists (DIY).

ITEM NUMBER	THA-W1004201
Process(es)	MIG (GMAW/FCAW), Stick (SMAW), TIG (GTAW)
Rated Output	210A/23.5V @ 20% Duty Cycle 110A/19.5V @ 45% Duty Cycle
Max. Open Circuit Voltage	62V DC
Amperage Range	5-150 Amp (115V), 5-210 Amp (230V)
Wire Feed Speed	67-650 IPM (1.7-16.5 m/min)
Weight	The actual weight is 26.5 kg (57.3 lb)



THA-W1004201

**ALSO AVAILABLE WITH UTILITY CART**

THA-W1004202

**ALSO AVAILABLE WITH SINGLE CYLINDER CART**

THA-W1004203

WELDING  
EQUIPMENT

## FABRICATOR 252i SYSTEM

The new Tweco® 252i is changing the game in welding. A new standard for portable welding equipment delivering 3-in-1 MIG, Stick and TIG capability from one integrated portable system.

**Applications include:** Mechanical Contractors • Automotive Repairs & Customization • Petro / Chem Fabrication • Sheet Metal Fabrication / Light to Medium Fabrication • On-Site & Portable Welding Applications • Dairy Industry • Food / Beverage Industry • Farms & Ranches • Training Institutions • Maintenance & Repairs.

ITEM NUMBER	THA-W1004401
Process(es)	MIG (GMAW), Flux Cored (FCAW), Lift TIG (GTAW), STICK (SMAW)
Rated Output	250A / 26.5V @ 40% Duty Cycle 200A / 24V @ 60% Duty Cycle 150A / 21.5V @ 100% Duty cycle
Max. Open Circuit Voltage	72V DC
Amperage Range	5-300 A
Wire Feed Speed	67 - 700 ipm (1.7 - 17.8 m/min)
Power Source Weight	29.6 kg (65.3 lb)



THA-W1004401

**ALSO AVAILABLE WITH SINGLE CYLINDER CART**

THA-W1004402

**DELUXE SYSTEM ALSO AVAILABLE WITH DUAL CYLINDER CART AND ACCESSORIES**

THA-W1004403





## Multi Process Welding System

# 95S PORTABLE DC WELDER SERIES

Versatile, multi-process Stick/TIG capability High 95 AMP welding output. Excellent, smooth & stable arc performance. Highly efficient inverter design. Ultra-light for maximum portability (10 lb). Simple & easy, ready to weld package.

**Applications include:** Maintenance • Utility / Farm • Home Hobbyist

ITEM NUMBER	THA-W1003209 - STICK KIT	THA-W1003210 - TIG/STICK KIT
Process(es)	Stick (SMAW)	Stick (SMAW), Lift TIG (GTAW)
Input Voltage	115 VAC 1 Phase 50/60hz	
Rated Output	Stick 90A / 23.6V @ 20% TIG 95A / 13.8V @ 20%	
Amperage Range	115V: 5-90A / TIG 5-95A	
Nominal OCV	60V	
Cooling	Fan Cooled	
Designed To	Protection Class IP23S	
Power Source Weight	4.4 kg (9.7 lb)	
Power Source Dimensions	H - 330 mm (13") x W - 130 mm (5.1") x D - 230 mm (9")	



# 161S PORTABLE DC WELDER SERIES

The Tweco® 161 S Portable DC Welder is designed for Stick & Lift TIG welding operations and provides a greater range of output for the advanced hobbyist or light industrial applications.

**Applications include:** Light industrial • Advanced Hobbyist.

ITEM NUMBER	THA-W1003609
Process(es)	Stick (SMAW), Lift TIG (GTAW)
Input Voltage	115/208-230V, 50/60HZ 1 Ph
Rated Output	Stick 115V, 15A 75A / 23.0V @ 60% TIG 115V, 15A 100A / 14V @ 60% Stick 115V, 20A 100A / 24V @ 35% TIG 115V, 20A 110A / 14.4V @ 50% Stick 230V 160A / 26.4V @ 30% TIG 230V 160A / 16.4V @ 30%
Amperage Range	Welding Amperage Range 115V Stick & TIG 10-110A Welding Amperage Range 230V Stick & TIG 10-160A
Nominal OCV	Volt/DC 71V
Cooling	Fan Cooled
Designed To	IP21S
Power Source Weight	7.9 kg (17.4 lb)
Power Source Dimensions	229 mm (9") x 135 mm (5.3") x 394 mm (15.5")





## Multi Process Welding System

# 201TS PORTABLE DC WELDER SERIES

TWECO® 201 TS PORTABLE DC WELDER packs a serious punch and is ideal for tradesmen or welders with more demanding requirements. Powerful yet compact and portable, the 201TS can deliver 125 Amps on 115 Volt circuits for Stickwelding and 160 Amps for TIG. The TIG torch included in the package has an integrated amperage control dial and on/off switch, which allows for the ultimate in welding control and simplicity.

ITEM NUMBER	THA-W1003807
Process(es)	Stick (SMAW), Lift TIG (GTAW), HF TIG (GTAW)
Input Voltage	115/208-230V, 50/60HZ, 1Ph
Rated Output	Stick 115V, 15A 70A / 22.8V @ 60% TIG 115V, 15A 110A / 14.4V @ 60% Stick 115V, 20A 100A / 24V @ 45% TIG 115V, 20A 125A / 15V @ 50% Stick 230V 200A / 28.0V @ 20% TIG 230V 200A / 18.0V @ 20%
Amperage Range	Welding Amperage Range 115V Stick 10-125A / TIG 10-160A Welding Amperage Range 230V Stick & TIG 10-200A
Nominal OCV	Volt/DC 71V
Cooling	Fan Cooled
Designed To	IP21S
Power Source Weight	9.7 kg (21.6 lb)
Power Source Dimensions	229 mm (9") x 135 mm (5.3") x 450 mm (17.7")



THA-W1003807

WELDING  
EQUIPMENT

# 186 AC/DC PORTABLE DC WELDER SERIES

**Applications include:** Aluminum Fabricators • Training Institutions • Maintenance & Repair • On-Site & Portable Welding Applications • Automotive, Boats & Trailers.

ITEM NUMBER	THA-W1006301	THA-W1006303 WITH FOOT PEDAL	THA-W1006304 WITH FOOT PEDAL & CART
Process(es)	HF TIG (GTAW), Lift TIG (GTAW), Stick (SMAW) Applications		
Input Voltage	208-230V		
Rated Output	200A / 18V @ 20% Duty Cycle 180A / 17.2V @ 25% Duty Cycle 150A / 16V @ 35% Duty Cycle		
Max. Open Circuit Voltage	70.3V DC/50VAC		
Amperage Range	10-200A		
Nominal OCV	10-200A		
Cooling	Fan Cooled		
Designed To	IP23S		
Power Source Weight	22 kg (48.4 lb)		
Power Source Dimensions	18" L x 24" W x 21.5" H		









THA-W1006301



GMAW Welding Equipment (MIG)

# MILLERMATIC® 140 AUTO-SET™

+ Input    + Max. Single Pass Weld Capacity  0.8 - 4.8 mm (24# - 3/16")

+ Output  

ITEM NUMBER	MIL-907335
Process(es)	MIG (GMAW), Flux Cored (FCAW)
Rated Output	90 Amps at 18 VDC, 20% Duty Cycle
Welding Amperage Range	30 - 140 Amps
Wire Feed Speed	15 - 390 IPM (1.0 - 12.7 m/min)
Net Weight	27.3 kg (60 lb)
Wire Dia. Capacity	0.6 - 0.8 mm (0.024 - 0.030") Solid Steel 0.6 - 0.8 mm (0.024 - 0.030") Stainless 0.8 - 1.2 mm (0.030 - 0.035") Flux Cored
Max. Spool Size Capacity	203 mm (8")

## Optional Accessories

<b>GAS-ALMIG16</b>	ALMIG Shielding gas*	<b>MIL-195149</b>	Protective Cover
<b>BLU-38977830</b>	LA S-6	<b>MET-RV130AL</b>	Machine & Cylinder Cart
<b>MIL-300371</b>	Spoolmate 100 Series		

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.


**MIL-907335**





All-in-one wire welder that welds 0.8-4.8 mm (24 gauge - 3/16") mild steel. The simplest Millermatic to set-up and start welding.



WIRE DIAMETER	0.6 mm (0.024")	0.8 mm (0.030")	0.9 mm (0.035")
Contact Tip	MIL-087299	MIL-000067	MIL-000068
Liner	MIL-194010	MIL-194011	MIL-194011
Diffuser	MIL-169716	MIL-169716	MIL-169716
Feed Roll - V-Smooth	MIL-220179	MIL-220179	MIL-220179
Feed Roll - V-Knurled	MIL-202926	MIL-202926	MIL-202926

## NOZZLE ID

**MIL-169715** Nozzle - Flush 12.7 mm (1/2") **MIL-226190** Gasless Flux-Core Nozzle - 9.5 mm (3/8")

# MILLERMATIC® 180 AUTO-SET™

+ Input    + Max. Single Pass Weld Capacity  0.8 - 7.9 mm (24# - 5/16")

+ Output  

ITEM NUMBER	MIL-907312
Process(es)	MIG (GMAW), Flux Cored (FCAW)
Rated Output	135 Amps at 22.5 VDC, 30% Duty Cycle
Welding Amperage Range	30 - 180 Amps
Wire Feed Speed	60 - 540 IPM (2.4 - 14.4 m/min)
Net Weight	32.7 kg (72 lb)
Wire Dia. Capacity	0.6 - 0.9 mm (0.024 - 0.035") Solid Steel 0.6 - 0.9 mm (0.024 - 0.035") Stainless 0.8 - 1.2 mm (0.030 - 0.045") Flux Cored
Max. Spool Size Capacity	203 mm (8")

## Optional Accessories

<b>GAS-ALMIG16</b>	ALMIG Shielding gas*	<b>MIL-195149</b>	Protective Cover
<b>BLU-38977830</b>	LA S-6	<b>MET-RV130AL</b>	Machine & Cylinder Cart
<b>MIL-300371</b>	Spoolmate 100 Series		

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.


**MIL-907312**

All-in-one wire welder that welds 0.8 - 7.9 mm (24 gauge - 5/16") mild steel.

WIRE DIAMETER	0.6 mm (0.024")	0.8 mm (0.030")	0.9 mm (0.035")
Contact Tip	MIL-087299	MIL-000067	MIL-000068
Liner	MIL-194010	MIL-194011	MIL-194011
Diffuser	MIL-169716	MIL-169716	MIL-169716
Feed Roll - V-Smooth	MIL-220179	MIL-220179	MIL-220179
Feed Roll - V-Knurled	MIL-202926	MIL-202926	MIL-202926

## NOZZLE ID

**MIL-169715** Nozzle - Flush 12.7 mm (1/2") **MIL-226190** Gasless Flux-Core Nozzle - 9.5 mm (3/8")

WELDING  
EQUIPMENT



GMAW Welding Equipment (MIG)

# MILLERMATIC® 211 AUTO-SET™ WITH MVP™

+ Input   

+ Max. Single Pass Weld Capacity  0.8 - 9.5 mm (24# - 3/8")

+ Output  

ITEM NUMBER	MIL-907422
Process(es)	MIG (GMAW), Flux Cored (FCAW)
Rated Output	150 Amps at 23.5 VDC, 30% Duty Cycle (230 V) 90 Amps at 20 VDC, 20% Duty Cycle (120 V)
Welding Amperage Range	30 - 210 Amps
Wire Feed Speed	60 - 540 IPM (1.5 - 11.7 m/min)
Net Weight	33.6 kg (74 lb)
Wire Dia. Capacity	0.6 - 0.9 mm (0.024 - 0.035") Solid Steel 0.6 - 0.9 mm (0.024 - 0.035") Stainless 0.8 - 1.2 mm (0.030 - 0.045") Flux Cored
Max. Spool Size Capacity	203 mm (8")

Optional Accessories			
GAS-ALMIG16	ALMIG Shielding gas*	MIL-195149	Protective Cover
BLU-38977830	LA S-6	MET-RV130AL	Machine & Cylinder Cart
MIL-300371	Spoolmate 100 Series		

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.



MIL-907422

All-in-one wire welder that welds material from 24-gauge to 3/8" thick in a single pass.

WIRE DIAMETER	0.6 mm (0.024")	0.8 mm (0.030")	0.9 mm (0.035")
Contact Tip	MIL-087299	MIL-000067	MIL-000068
Liner	MIL-194010	MIL-194011	MIL-194011
Diffuser	MIL-169716	MIL-169716	MIL-169716
Feed Roll - V-Smooth	MIL-220179	MIL-220179	MIL-220179
Feed Roll - V-Knurled	MIL-202926	MIL-202926	MIL-202926

## NOZZLE ID

MIL-169715 Nozzle - Flush 12.7 mm (1/2") MIL-226190 Gasless Flux-Core Nozzle - 9.5 mm (3/8")

WELDING  
EQUIPMENT

# MILLERMATIC® 212 AUTO-SET™

+ Input   

+ Max. Single Pass Weld Capacity  0.9 - 9.5 mm (22# - 3/8")

+ Output  

ITEM NUMBER	MIL-907405
Process(es)	MIG (GMAW), Flux Cored (FCAW)
Rated Output	160 Amps at 24.5 VDC, 60% Duty Cycle
Welding Amperage Range	30 - 210 Amps
Wire Feed Speed	50 - 700 IPM (1.3 - 17.8 m/min)
Net Weight	81 kg (178 lb)
Wire Dia. Capacity	0.6 - 0.9 mm (0.023 - 0.035") Solid Steel 0.6 - 0.9 mm (0.023 - 0.035") Stainless 0.8 - 1.2 mm (0.030 - 0.045") Flux Cored
Max. Spool Size Capacity	305 mm (12")

Optional Accessories			
GAS-ALMIG16	ALMIG Shielding gas*	MIL-300497	Spoolmate 200
BLU-38978435	LA S-6	MIL-195142	Protective Cover

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.



MIL-907405

All-in-one wire welder that welds material from 22 gauge to 3/8" thick in a single pass.

WIRE DIAMETER	0.6 mm (0.024")	0.8 mm (0.030")	0.9 mm (0.035")	1.2 mm (0.045")
Contact Tip	MIL-087299	MIL-000067	MIL-000068	MIL-000069
Liner	MIL-194010	MIL-194011	MIL-194011	MIL-194012
Diffuser	MIL-169728	MIL-169728	MIL-169728	MIL-169728
Feed Roll - V-Smooth	MIL-087131	MIL-079594	MIL-079595	MIL-079596
Feed Roll - V-Knurled			MIL-079606	MIL-079607

## NOZZLE ID






MIL-200258 Nozzle - Flush 12.7 mm (1/2") MIL-169724 Nozzle - Recessed 12.7 mm (1/2")  
MIL-169725 Nozzle - Recessed 15.9 mm (5/8") MIL-169726 Nozzle - Flush 15.9 mm (5/8")







GMAW Welding Equipment (MIG)

# MILLERMATIC® 252

+ Input     + Max. Single Pass Weld Capacity  0.9 - 12.7 mm (22# - 1/2")

+ Output  

ITEM NUMBER	MIL-907322 (230/460/575 V)
Process(es)	MIG (GMAW), Flux Cored (FCAW)
Rated Output	200 Amps at 28 VDC, 60% Duty Cycle 250 Amps at 28 VDC, 40% Duty Cycle
Welding Amperage Range	30 - 300 Amps
Wire Feed Speed	50 - 700 IPM (1.3 - 17.8 m/min)
Net Weight	94 kg (207 lb)
Wire Dia. Capacity	0.6 - 1.2 mm (0.023 - 0.045") Solid Steel 0.6 - 1.2 mm (0.023 - 0.045") Stainless 0.8 - 1.2 mm (0.030 - 0.045") Flux Cored
Max. Spool Size Capacity	305 mm (12")

Optional Accessories			
<b>GAS-ALMIG16</b>	ALMIG Shielding gas*	<b>MIL-300337</b>	Dual Cylinder Rack
<b>BLU-38978435</b>	LA S-6	<b>MIL-195142</b>	Protective Cover
<b>MIL-130831</b>	Spoolmatic 30A		

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.


**MIL-907322**







Welds material from 22 gauge to 1/2" thick in a single pass. Highest output in its class.



WIRE DIAMETER	0.6 mm (0.024")	0.8 mm (0.030")	0.9 mm (0.035")	1.2 mm (0.045")
Contact Tip	MIL-087299	MIL-000067	MIL-000068	MIL-000069
Liner	MIL-194010	MIL-194011	MIL-194011	MIL-194012
Diffuser	MIL-169728	MIL-169728	MIL-169728	MIL-169728
Feed Roll - V-Smooth	MIL-087131	MIL-079594	MIL-079595	MIL-079596
Feed Roll - V-Knurled			MIL-079606	MIL-079607

## NOZZLE ID

**MIL-200258** Nozzle - Flush 12.7 mm (1/2") **MIL-169724** Nozzle - Recessed 12.7 mm (1/2")  
**MIL-169725** Nozzle - Recessed 15.9 mm (5/8") **MIL-169726** Nozzle - Flush 15.9 mm (5/8")

# MILLERMATIC® 350P

+ Input      + Max. Single Pass Weld Capacity  0.9 - 12.7 mm (22# - 1/2")

+ Output  

ITEM NUMBER	MIL-907300
Process(es)	MIG (GMAW), Pulsed MIG (GMAW-P), Flux Cored (FCAW)
Rated Output	300 Amps at 32 VDC, 60% Duty Cycle, 1- or 3-Phase
Welding Amperage Range	25 - 400 Amps
Wire Feed Speed	50 - 700 IPM (1.3 - 17.8 m/min)
Net Weight	82 kg (181 lb)
Wire Dia. Capacity	0.6 - 1.2 mm (0.023 - 0.045") Solid Steel 0.8 - 1.2 mm (0.030 - 0.045") Stainless 0.9 - 1.2 mm (0.035 - 0.047") Aluminum 0.9 - 1.3 mm (0.035 - 0.052") Metal-Core 0.8 - 1.3 mm (0.030 - 0.052") Flux Cored
Max. Spool Size Capacity	305 mm (12")

Optional Accessories			
<b>GAS-BLU822</b>	Blueshield 8	<b>MIL-130831</b>	Spoolmatic 30A
<b>BLU-37963175</b>	LA T-91 LF	<b>MIL-195142</b>	Protective Cover
<b>MIL-195299</b>	Dual Cylinder Rack		

\* General purpose wire / gas combination for mild steel FCAW.  
Please contact Air Liquide for advice on more specific needs.


**MIL-907300**

First single- or three-phase power Millermatic that welds material from 22 gauge to 1/2" thick in a single pass. Perfect for fabrication, manufacturing, maintenance and repair.

WIRE DIAMETER	0.8 mm (0.030")	0.9 mm (0.035")	1.2 mm (0.045")
Centerfire™ Contact Tip	BER-T030	BER-T035	BER-T045
Liner	BER-43015	BER-43115	BER-43115
Centerfire™ Diffuser	BER-DS1	BER-DS1	BER-DS1
Feed Roll Kit - V-Smooth	MIL-046780	MIL-046781	MIL-046782
Feed Roll Kit - V-Knurled		MIL-046792	MIL-046793

## NOZZLE ID

**BER-NS5800B** Centerfire™ Nozzle - Flush, Brass 15.9 mm (5/8") **BER-NS1200B** Centerfire™ Nozzle - Flush, Brass 12.7 mm (1/2")  
**BER-NS1218B** Centerfire™ Nozzle - Recessed, Brass 12.7 mm (1/2") **BER-NS5818B** Centerfire™ Nozzle - Recessed, Brass 15.9 mm (5/8")

WELDING  
EQUIPMENT





GMAW Welding Equipment (MIG)

## DELTAWELD® SERIES

+ Input   

+ Output  

ITEM NUMBER	MIL-903376
Process(es)	MIG (GMAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (1/4" Carbons)
Rated Output	450 A at 38 VDC, 100% Duty Cycle
Welding Amperage Range	CV mode: 15 - 38 V (Recommended)
Net Weight	174 kg (384 lb)
Max. Spool Size Capacity	203 mm (8")

MIL-903396

MIL-903376 &amp; MIL-903392

MIL-903394



Rock solid reliability, exceptional value and power efficient operation make this the "Better!" MIG solution for the most demanding industrial manufacturing applications. Combined with the 70 Series wire feeder this system is the workhorse of the industrial market.

"Optional Stationary and MIG Runner packages are available."

WELDING  
EQUIPMENT

## AXCESS® SYSTEMS

+ Input   

+ Output  

ITEM NUMBER	AXCESS 300 MIL-907150	AXCESS 450 MIL-907152	AXCESS 675 MIL-907154
Process(es)	Accu-Pulse® MIG (GMAW-P) Accu-Curve™ Accu-Speed™ (Optional) Pulsed MIG (GMAW-P), Metal Core, MIG (GMAW), RMD™ Regulated Metal Deposition (GMAW-SCT) Optional/ Carbon Arc Gouging (CAC-A) can also be activated		
Rated Output	Access 300: 300A at 29 VDC, 60% Duty Cycle Access 450: 450 A at 36.5 VDC, 100% Duty Cycle Access 675: 675A at 38 VDC, 100% Duty Cycle		
Output Power Range	10 - 44 V		
Net Weight	Access 300: 52.6 kg (116 lb) Access 450: 73.9 kg (163 lb) Access 675: 94.3 kg (208 lb)		

MIL-907150

MIL-907152

MIL-907154







For semi-automatic MIG - digital control technology combined with inverter welding power source. Designed to reduce complexity of a semi-automatic pulsed MIG system.



"Optional Stationary and MIG Runner packages are available."



## GTAW Welding Equipment (TIG)

# MAXSTAR® 150 STH

+ Input    + TIG Welding Capacity  Max 4.8 mm (3/16") Min 0.5 mm (0.020")

+ Output  

ITEM NUMBER	MIL-907136 MACHINE ONLY
Process(es)	TIG (GTAW) DC Pulsed TIG (GTAW-P) DC Stick (SMAW) DC
Rated Output	TIG 115V 150 Amps at 16 VDC, 30% Duty Cycle TIG 230V 150 Amps at 16 VDC, 30% Duty Cycle Stick 115V 100 Amps at 24 VDC, 35% Duty Cycle Stick 230V 150 Amps at 26 VDC, 30% Duty Cycle
Welding Amperage Range	TIG 115V 5 - 150 Amps TIG 230V 5 - 150 Amps Stick 115V 20 - 100 Amps Stick 230V 20 - 150 Amps
Net Weight	6.2 kg (13.7 lb)

### Optional Accessories

<b>GAS-ALTIG16</b>	ALTIG Shielding gas*	<b>BLU-04735065</b>	Tiggers Welder Gloves (Large)
<b>BLU-46601306</b>	Blueshield ER70S-3 2.4 mm (3/32") Rods	<b>3MC-040011231</b>	3M Speedglas 9002X
<b>BLU-10340824</b>	Blueshield 630-308L 2.4 mm (3/32") Rods		









\* TIG/STICK package shown

Light-weight and portable DC output TIG/Stick machine that utilizes both non-contact HF and Lift Arc™ TIG arc starting, plus built in pulser.

**Application include:** Construction • Fabrication • Farm and Ranch • Field Maintenance and Repair • Home/Hobby • In-Plant Maintenance and Repair • Pipe Fabrication • Schools/Training • Ship/Boat

# MAXSTAR® 150 STL

+ Input    + TIG Welding Capacity  Max 4.8 mm (3/16") Min 0.5 mm (0.020")

+ Output  

ITEM NUMBER	MIL-903135 MACHINE ONLY
Process(es)	TIG (GTAW) DC Stick (SMAW) DC
Rated Output	TIG 115V 150 Amps at 16 VDC, 30% Duty Cycle TIG 230V 150 Amps at 16 VDC, 30% Duty Cycle Stick 115V 100 Amps at 24 VDC, 35% Duty Cycle Stick 230V 150 Amps at 26 VDC, 30% Duty Cycle
Welding Amperage Range	TIG 115V 5 - 150 Amps TIG 230V 5 - 150 Amps Stick 115V 20 - 100 Amps Stick 230V 20 - 150 Amps
Net Weight	6.2 kg (13.7 lb)

### Optional Accessories

<b>GAS-ALTIG16</b>	ALTIG Shielding gas*	<b>BLU-04735065</b>	Tiggers Welder Gloves (Large)
<b>BLU-46601306</b>	Blueshield ER70S-3 2.4 mm (3/32") Rods	<b>3MC-040011231</b>	3M Speedglas 9002X
<b>BLU-10340824</b>	Blueshield 630-308L 2.4 mm (3/32") Rods		



\* TIG/STICK package shown

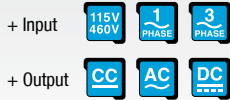
Light-weight and portable DC output TIG/Stick machine that utilizes Lift Arc™ technology for TIG arc starting.

**Application include:** Construction • Farm and Ranch



## GTAW Welding Equipment (TIG)

# DYNASTY® 200



+ Max. Welding Capacity  0.1 mm - 6.4 mm (0.004" - 1/4")

ITEM NUMBER	MIL-907099/SD	MIL-907099011/DX
<b>Process(es)</b>	TIG (GTAW) DC, TIG (GTAW) AC, Pulsed TIG (GTAW-P) AC - Not available on SD model, Pulsed TIG (GTAW-P) DC - Not available on SD model, Stick (SMAW) DC, Stick (SMAW) AC, Air Carbon Arc Cutting and Gouging (CAC-A)	
<b>Rated Output</b>	TIG 150 A at 16 V, 60% Duty Cycle (1 or 3-Phase) TIG 140 A at 15.6 V, 40% Duty Cycle (115 VAC) TIG 100 A at 14 V, 100% Duty Cycle (115 VAC)  Stick 130 A at 25.2 V, 60% Duty Cycle (1 or 3-Phase) Stick 100 A at 24 V, 60% Duty Cycle (115 VAC) Stick 90 A at 23.6 V, 100% Duty Cycle (115 VAC)	
<b>Welding Amperage Range</b>	1-200 Amps (1-150 on 120 VAC)	
<b>Net Weight</b>	20.5 kg (45 lb)	

### Optional Accessories

<b>BLU-10340824</b> Blueshield 630-308L 2.4 mm (3/32") Rods	<b>BLU-04735065</b> Tiggers Welder Gloves (Large)
<b>BLU-46601306</b> Blueshield ER70S-3 2.4 mm (3/32") Rods	<b>GAS-ALTIG16</b> ALTIG Shielding gas*
<b>3MC-040011231</b> 3M Speedglas 9002X	



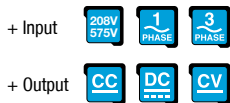
MIL-907099/SD

Maximum flexibility - Miller Electric combines advanced inverter technology with Auto-Line™ technology, offering the most flexible AC/DC TIG/Stick power supply in the welding industry.

**Application include:** Aviation • Fabrication • Mechanical Contracting • Ship/Boat

"A variety of packages and options is available."

# DYNASTY® 350



+ Max. Welding Capacity  0.3 mm - 15.9 mm (0.012" - 5/8")

ITEM NUMBER	MIL-907204
<b>Process(es)</b>	TIG (GTAW) DC TIG (GTAW) AC Pulsed TIG (GTAW-P) AC Pulsed TIG (GTAW-P) DC Stick (SMAW) DC Stick (SMAW) AC Air Carbon Arc Cutting and Gouging (CAC-A)
<b>Rated Output</b>	3-Phase: 300 A at 32 V, 60% Duty Cycle Single-Phase: 225 A at 29 V, 60% Duty Cycle
<b>Welding Amperage Range</b>	3 - 350 Amps
<b>Net Weight</b>	61 kg (135.5 lb) 122 kg (268.5 lb), with TIG Runner®

### Optional Accessories

<b>GAS-ALTIG16</b> ALTIG Shielding gas*	<b>BLU-04735065</b> Tiggers Welder Gloves (Large)
<b>BLU-46601306</b> Blueshield ER70S-3 2.4 mm (3/32") Rods	<b>3MC-040011231</b> 3M Speedglas 9002X
<b>BLU-10340824</b> Blueshield 630-308L 2.4 mm (3/32") Rods	



MIL-907204

The Dynasty 350 is a powerful, compact power source capable of welding up to 5/8" aluminum. Total arc control provides maximum productivity and weld quality while conserving energy compared to traditional welding machines.

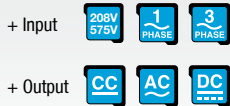
**Application include:** Aviation • Fabrication • Pipe Fabrication • Ship/Boat

"A variety of packages and options is available."



## GTAW Welding Equipment (TIG)

# DYNASTY® 700



+ Max. Welding Capacity  0.5 mm - 25.4 mm (0.020" - 1.0")

ITEM NUMBER	MIL-907101
Process(es)	TIG (GTAW) DC TIG (GTAW) AC Pulsed TIG (GTAW-P) AC Pulsed TIG (GTAW-P) DC Stick (SMAW) DC Stick (SMAW) AC Air Carbon Arc Cutting and Gouging (CAC-A)
Rated Output	500 A at 40 V, 100% Duty Cycle (3-Phase) 450 A at 38 V, 60% Duty Cycle (1-Phase)
Welding Amperage Range	5-700 A; Auto-Line - 208-575 V (±10%), 1- or 3-Phase
Net Weight	90 kg (198 lb)

### Optional Accessories

BLU-10340824	Blueshield 630-308L 2.4 mm (3/32") Rods	BLU-04735065	Tiggers Welder Gloves (Large)
BLU-46601306	Blueshield ER70S-3 2.4 mm (3/32") Rods	GAS-ALTIG16	ALTIG Shielding gas*
3MC-040011231	3M Speedglas 9002X		



MIL-907101

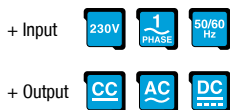
The Dynasty 700 is a powerful, compact power source capable of welding up to 1" aluminum. Total arc control provides maximum productivity and weld quality while conserving energy compared to traditional welding machines.

**Application include:** Aviation • Fabrication

- Field Maintenance and Repair
- Manufacturing • Pipe Fabrication

"A variety of packages is available."

# DIVERSION™ 165



+ Max. Welding Capacity  0.8 - 4.8 mm (0.030" - 3/16")

ITEM NUMBER	MIL-907626
Process(es)	TIG (GTAW) DC TIG (GTAW) AC
Rated Output	150 Amps at 16VDC, 20% Duty Cycle
Welding Amperage Range	10 - 165 Amps
Net Weight	23 kg (50 lb)

### Optional Accessories

GAS-ALTIG16	ALTIG Shielding gas*	BLU-04735065	Tiggers Welder Gloves (Large)
BLU-46601306	Blueshield ER70S-3 2.4 mm (3/32") Rods	3MC-040011231	3M Speedglas 9002X
BLU-10340824	Blueshield 630-308L 2.4 mm (3/32") Rods		



MIL-907626

Miller's most affordable and easy-to-use AC/DC TIG machine that was designed specifically for the personal user.

**Application include:** Construction • Aluminum Welding • Home/Hobby • Metal Art/ Sculpture • Motorsports (car, truck, bike, etc.) • Schools/Training • Stainless Steel Welding • Welding Projects

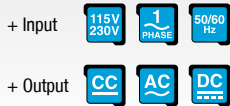
**Package include:** Diversion 165 power source 1.8 m (6') • Primary cord (50 A, 230 V plug) • 3.8 m (12.5') Weldcraft WP-17 TIG torch with: Backcap, Ceramic gas cup, 2.4 mm (3/32") collet and collet body, 2% ceriated tungsten 3.7 m (12') • Work lead with clamp • RFCS-RJ45 remote foot control • Argon regulator/flow gauge with hose • TIG Welding for Dummies book with content by Miller





GTAW Welding Equipment (TIG)

## DIVERSION™ 180



+ Max. Welding Capacity  0.6 - 4.8 mm (0.025" - 3/16")

ITEM NUMBER	MIL-907627
Process(es)	TIG (GTAW) DC TIG (GTAW) AC
Rated Output	150 Amps at 16 VDC, 20% Duty Cycle (230V input) 125 Amps at 12.4 VDC, 35% Duty Cycle (115V input)
Welding Amperage Range	10 -180 Amps (230V input) 10-125 Amps (115V input)
Net Weight	23 kg (50 lb)

### Optional Accessories

<b>GAS-ALTIG16</b> ALTIG Shielding gas*	<b>BLU-04735065</b> Tigers Welder Gloves (Large)
<b>BLU-46601306</b> Blueshield ER70S-3 2.4 mm (3/32") Rods	<b>3MC-040011231</b> 3M Speedglas 9002X
<b>BLU-10340824</b> Blueshield 630-308L 2.4 mm (3/32") Rods	



MIL-907627

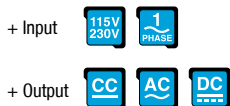
Perfect for the personal user, this AC/DC TIG machine upgrade has both 115V and 230V input power capability.

**Application include:** Aluminum Welding • Home/Hobby • Metal Art/Sculpture • Motorsports (car, truck, bike, etc.) • Schools/Training • Stainless Steel Welding • Welding Projects

**Comes complete with:** Diversion 180 power source • 2.4 m (8') primary cord with (2) MVP plugs (219261 & 219258) • 3.8 m (12.5') Weldcraft WP-17 TIG torch with: Backcap, Ceramic gas cup, 2.4 mm (3/32") collet and collet body, 2% ceriated tungsten • RFCS-RJ45 remote foot control • 3.7 m (12') work lead with clamp • Argon regulator/flow gauge with hose • TIG Welding for Dummies book with content by Miller

WELDING EQUIPMENT

## SYNCROWAVE® 210



+ Max. Welding Capacity  0.5 mm - 6.4 mm (0.020" - 1/4")

ITEM NUMBER	MIL-907596
Process(es)	TIG (GTAW) DC TIG (GTAW) AC Pulsed TIG (GTAW-P) DC Pulsed TIG (GTAW-P) AC Stick (SMAW) DC
Rated Output	DC TIG: 125 Amps at 15 V, 60% Duty Cycle AC TIG: 114 Amps at 14.6 V, 60% Duty Cycle DC Stick: 90 Amps at 23.6 V, 60% Duty Cycle
Welding Amperage Range	5-210 Amps
Net Weight	61 kg (133.5 lb)

### Optional Accessories

<b>GAS-ALTIG16</b> ALTIG Shielding gas*	<b>3MC-040011231</b> 3M Speedglas 9002X
<b>BLU-10340816</b> Blueshield 630-308L 2.4 mm (3/32") Rods	<b>MIL-195142</b> Protective Cover



MIL-907596

The Syncrowave 210 is ideal for both light industrial applications and personal users. It does not compromise power on performance for affordable inverter technology.

**Application include:** Fabrication • In-Plant Maintenance and Repair • Manufacturing • Home/Hobby • Motorsports (car, truck, bike, etc.) • Schools/Training • Welding Projects • Aluminum Welding

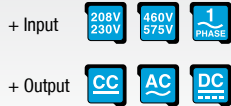
**Comes complete with:** Syncrowave 210 power source • 3 m (10') primary cord • 2 MVP plugs for 115 V and 230 V, 3.8 m (12') 150 A TIG torch with Dinse connector • 3.8 m (12') work cable with clamp and Dinse connector • Electrode holder with Dinse Connector • RFCS-14 foot control with 6 m (20') cord, Regulator/flow gauge and gas hose, Factory-installed running gear with EZ-Change™ Low Cylinder Rack





GTAW Welding Equipment (TIG)

# SYNCROWAVE® 250 DX



+ Max. Welding Capacity 0.3 - 12.7 mm (0.012" - 1/2")

ITEM NUMBER	MIL-907195	MIL-951118
Process(es)	TIG (GTAW) DC TIG (GTAW) AC Pulsed TIG (GTAW-P) DC Pulsed TIG (GTAW-P) AC - Not available on Base model Stick (SMAW) DC Stick (SMAW) AC Air Carbon Arc Cutting and Gouging (CAC-A)	
Rated Output	250 A at 30 VAC, 40% Duty Cycle 200 A at 28 VAC, 60% Duty Cycle	
Welding Amperage Range	3 - 310 Amps	
Net Weight	172 kg (378 lb)	

## Optional Accessories

MIL-194692	Power Factor Correction Kit	3MC-040011231	3M Speedglas 9002X
BLU-10340824	Blueshield 630-308L 2.4 mm (3/32") Rods	GAS-ALTiG16	ALTIG Shielding gas*
MIL-190547	Sequence Module		



\* Complete package shown

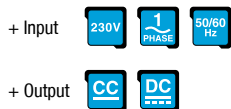
Syncrowave 250 DX has proven itself time and time again in the most demanding applications. Its industrial design and construction ensure reliable operation for years to come.

**Application include:** Aviation • Fabrication • Motorsports (car, truck, bike, etc.) • Manufacturing • Pipe Fabrication • Schools/Training

**Syncrowave Complete Package includes:** Syncrowave® • Coolmate™ 3CS cooler • No. 37 running gear • TIG torch kit with Accessories • Foot pedal • Four gallons of coolant

WELDING  
EQUIPMENT

# SYNCROWAVE® 350 LX



+ Max. Welding Capacity 0.3 mm - 15.9 mm (0.012" - 5/8")

ITEM NUMBER	MIL-907199	MIL-951120
Process(es)	TIG (GTAW) DC TIG (GTAW) AC Pulsed TIG (GTAW-P) AC Pulsed TIG (GTAW-P) DC Stick (SMAW) DC Stick (SMAW) AC Air Carbon Arc Cutting and Gouging (CAC-A)	
Rated Output	350 A at 34 VAC, 40% Duty Cycle 300 A at 32 VAC, 60% Duty Cycle	
Welding Amperage Range	3 - 400 Amps	
Net Weight	225 kg (496 lb)	

## Optional Accessories

MIL-194692	Power Factor Correction Kit	3MC-040011231	3M Speedglas 9002X
BLU-10340824	Blueshield 630-308L 2.4 mm (3/32") Rods	GAS-ALTiG16	ALTIG Shielding gas*
MIL-190547	Sequence Module		



Syncrowave 350 LX provides a stable low-end output for intricate applications and the capability to ensure you have enough power for those heavy demands.

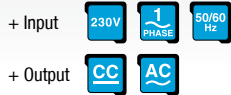
**Application include:** Aviation • Fabrication • Field Maintenance and Repair • Manufacturing • Pipe Fabrication • Schools/Training • Ship/Boat

**Syncrowave Complete Package includes:** Syncrowave® • Coolmate™ 3CS cooler • No. 37 running gear • TIG torch kit with Accessories • Foot pedal • Four gallons of coolant



SMAW Welding Equipment (Stick)

# THUNDERBOLT® XL 225 AC



ITEM NUMBER	MIL-903641
Process(es)	Stick (SMAW)
Rated Output	AC 225 Amps at 25 VAC, 20% Duty Cycle at 60 Hz 15%, 50 Hz)
Welding Amperage Range	High: 40 – 235 A (AC) Low: 30 – 150 A (AC)
Max. Open Circuit Voltage	80
Net Weight	39 kg (85 lb)



MIL-903641

Economical Stick machine with 225 AC amps.

WELDING  
EQUIPMENT

# THUNDERBOLT® XL 225 AC/150 DC



ITEM NUMBER	MIL-903642
Process(es)	Stick (SMAW)
Rated Output	AC 225 Amps at 25 VAC, 20% Duty Cycle at 60 Hz (15%, 50 HZ) DC 150 Amps at 25 VDC, 20% Duty Cycle at 60 Hz (15%, 50 HZ)
Welding Amperage Range	AC 30 - 235 DC 30 - 160
Max. Open Circuit Voltage	80
Net Weight	47 kg (104 lb)



MIL-903642

Economical Stick machine with 225 AC amps and 150 DC amps of output.



## SMAW Welding Equipment (Stick)

# GOLD STAR® 452

+ Input	200V 208V	460V 575V	3 PHASE	50/60 Hz
+ Output	CC	DC		

ITEM NUMBER	MIL-903374 200 (208) / 230 / 460 V	MIL-903400 230 / 460 / 575 V
Process(es)	Stick (SMAW) TIG (GTAW) Air Carbon Arc (CAC-A) thru 5/16" carbons Flux Cored (FCAW) MIG Spray Transfer (GMAW) Welding with Voltage-Sensing Feeder	
Rated Output	450 A at 38 VDC, 60% Duty Cycle	
Welding Amperage Range	20 - 590 Amps	
Max. Open Circuit Voltage	72 VDC	
Net Weight	183 kg (404 lb)	



MIL-903374

From steel erection to shipbuilding, from foundries to refineries, the Gold Star Series from Miller is known by welders over THE WORLD for rugged, reliable performance and superior arc characteristics.

**Application include:** Manufacturing Industrial • Steel Building Erection • Pipe Welding  
• Maintenance and Repair • Shipbuilding • Construction • Foundries

# GOLD STAR® 652

+ Input	230V	460V 575V	3 PHASE	50/60 Hz
+ Output	CC	DC		

ITEM NUMBER	MIL-903402
Process(es)	Stick (SMAW) TIG (GTAW) Air Carbon Arc (CAC-A) thru 3/8" carbons Flux Cored (FCAW) MIG Spray Transfer (GMAW) Welding with Voltage-Sensing Feeder
Rated Output	650 A at 44 VDC, 60% Duty Cycle
Welding Amperage Range	50 - 850 Amps
Max. Open Circuit Voltage	72 VDC
Net Weight	229 kg (505 lb)



MIL-903402

From steel erection to shipbuilding, from foundries to refineries, the Gold Star Series from Miller is known by welders the world over for rugged, reliable performance and superior arc characteristics.

**Application include:** Manufacturing Industrial • Steel Building Erection • Pipe Welding  
• Maintenance and Repair • Shipbuilding • Construction • Foundries








SMAW Welding Equipment (Stick)



Multi Process Welding System

# MAXSTAR® 150 S

+ Input   

+ Output  

ITEM NUMBER	MIL-907134	MIL-907134012
Process(es)	Stick (SMAW)	
Rated Output	115 V 100 Amps at 24 VDC, 35% Duty Cycle 230 V 150 Amps at 26 VDC, 30% Duty Cycle	
Welding Amperage Range	115 V 20 - 100 Amps 230 V 20 - 150 Amps	
Max. Open Circuit Voltage	90	
Net Weight	6 kg (13.2 lb)	



Get maximum portability and performance in the most compact Stick package in the industry.

WELDING  
EQUIPMENT

# DIMENSION™ 302

+ Input   

+ Output  

ITEM NUMBER	MIL-903216
Process(es)	MIG (GMAW) Stick (SMAW) TIG (GTAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (1/4 in carbons)
Rated Output	300 A at 32 VDC, 100% Duty Cycle
Output Power Range (CC_Mode)	15-375 A
Output Power Range (CV_Mode)	10-32 V
Max. Open Circuit Voltage	60 VDC in CC mode 36 VDC in CV mode
Net Weight	164 kg (361 lb)



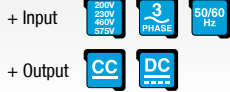
Miller's Dimension Series of three-phased, CC/CV DC power sources provides outstanding versatility, plus the endurance to handle demanding industrial applications. Engineered to provide exceptional performance across a variety of arc welding processes.

**Application include:** Manufacturing Industrial • Pipe Welding • Fabrication  
• Shipbuilding • Heavy Manufacturing • Maintenance and Repair • Construction



## Multi Process Welding System

# DIMENSION™ 452



ITEM NUMBER	MIL-903254 200-208 / 230 / 460 V	MIL-903255 230 / 460 / 575 V
Process(es)	MIG (GMAW) Stick (SMAW) TIG (GTAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (through 5/16 in carbons), Submerged Arc Welding (SAW)	
Rated Output	450 A at 38 VDC, 100% Duty Cycle	
Output Power Range (CC_Mode)	20-565 A	
Output Power Range (CV_Mode)	10 - 38 V	
Max. Open Circuit Voltage	65 VDC in CC mode 43 VDC in CV mode	
Net Weight	192 kg (424 lb)	



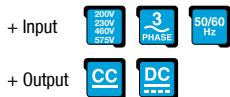
MIL-903254

Miller's Dimension Series of three-phased, CC/CV DC power sources provides outstanding versatility, plus the endurance to handle demanding industrial applications. Engineered to provide exceptional performance across a variety of arc welding processes.

**Application include:** Manufacturing Industrial • Pipe Welding • Fabrication • Shipbuilding • Heavy Manufacturing • Maintenance and Repair • Construction

WELDING  
EQUIPMENT

# DIMENSION™ 652



ITEM NUMBER	MIL-903379
Process(es)	MIG Spray transfer (GMAW) Stick (SMAW) TIG (GTAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (through 3/8 in carbons), Submerged Arc Welding (SAW)
Rated Output	650 A at 44 VDC, 100% Duty Cycle
Output Power Range (CC_Mode)	50-815 A
Output Power Range (CV_Mode)	10 - 65 V
Max. Open Circuit Voltage	72 VDC in CC mode 67 VDC in CV mode
Net Weight	247 kg (545 lb)



MIL-903379

Miller's Dimension Series of three-phased, CC/CV DC power sources provides outstanding versatility, plus the endurance to handle demanding industrial applications. Engineered to provide exceptional performance across a variety of arc welding processes.




**Application include:** Manufacturing Industrial • Pipe Welding • Fabrication • Railroad • Shipbuilding








Multi Process Welding System

## DIMENSION™ NT 450

+ Input   

+ Output   

ITEM NUMBER	MIL-907256
Process(es)	MIG (GMAW) Stick (SMAW) TIG (GTAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) thru 5/16" carbons
Rated Output	450A at 38 VDC, 100 % Duty Cycle
Amperage / Voltage Range	CV mode: 10 - 38 V CC mode: 5 - 500 A
Max. Open Circuit Voltage	80 VDC
Net Weight	171 kg (376 lb)

"Optional Stationary and MIG Runner packages are available."



MIL-907256

A new generation of hybrid welding technology with the arc performance of an inverter and the same robust design that is a trademark of the Dimension family.

**Application include:** Manufacturing Industrial • Manufacturing • Construction  
• Maintenance and Repair • Pipe Welding • Shipbuilding

WELDING  
EQUIPMENT

## XMT® 304 CC/CV

+ Input   

+ Output   

ITEM NUMBER	MIL-903471
Process(es)	MIG (GMAW) Pulsed MIG (GMAW-P)* Stick (SMAW) TIG (GTAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (1/4 in carbons)
Rated Output	300 A at 32 VDC, 60% Duty Cycle, 3-Phase 225 A at 29 VDC, 60% Duty Cycle, 1-Phase
Output Power Range (CC Mode)	5 - 400 A
Output Power Range (CV Mode)	10 - 35 V
Max. Open Circuit Voltage	90 VDC
Dimensions (H x W x D)	432 mm (17") x 318 mm (12.5") x 610 mm (24")
Net Weight	36.1 kg (79.5 lb)

MIG Runner packages available.



MIL-903471

The multiprocess XMT 304 CC/CV combines the advantages of inverter-based power with the built-in features and productivity of high-end MIG machines.

**Application include:** Manufacturing Industrial • Shipbuilding • Steel Building Erection  
• Pipe Welding • Fabrication • Construction



Multi Process Welding System

## XMT® 350 SERIES

+ Input    

+ Output   

ITEM NUMBER	MIL-907161 XMT 350 CC/CV	MIL-907224 XMT 350 VS
Process(es)	MIG (GMAW), Pulsed MIG (GMAW-P)* TIG (GTAW), Stick (SMAW), Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (5/16" carbons) * XMT 350 MPa; XMT 350 CC/CV with required optional control; not available with XMT 350 VS model.	
Input Power	Auto-Line	
Rated Output	350A at 34VDC, 60% Duty Cycle, 3- Phase 300A at 32VDC, 60% Duty Cycle, 1- Phase	
Max. Open Circuit Voltage	75 V DC	
Amperage / Voltage Range	5 - 425 A, in CC mode 10 - 38 V, in CV mode	
Net Weight	36,6 kg (80 lb)	



MIL-907161

Outstanding multiprocess inverters with built-in features providing the ultimate in productivity. Auto-Line provides link-free primary power operation.

**Application include:** Manufacturing Industrial • Construction • Shipbuilding • Railroad • Truck and Trailer Manufacturing • Fabrication • Repair Shops • Rental Fleets XMT 350 VS model is designed for construction applications with a voltage sensing feeder.

## XMT® 450 SERIES

+ Input    

+ Output   

ITEM NUMBER	MIL-907481 230/460V	MIL-907224-X 575V
Process(es)	MIG (GMAW), Pulsed MIG (GMAW-P)* TIG (GTAW), Stick (SMAW) Flux Cored (FCAW) Air Carbon Arc (CAC-A) Cutting and Gouging (3/8" carbons) * XMT 450 MPa; XMT 450 CC/CV with required optional control.	
Rated Output	450 A at 38 VDC, 100% Duty Cycle 560 A at 43 VDC, 60% Duty Cycle	
Amperage / Voltage Range	Voltage Range in CV Mode / 10 - 38 V Amperage Range in CC Mode / 15-600 A	
Max. Open Circuit Voltage	90 V DC	
Net Weight	55.3 kg (122 lb)	



MIL-907481

The Outstanding multiprocess inverters with built-in features providing the ultimate in productivity. Available in two versions. The full version XMT 450 CC/CV and the XMT 450 MPa with built in Pulse MIG.

**Application include:** Heavy Industrial Applications • Construction • Shipbuilding • Railroad • Truck and Trailer Manufacturing • Fabrication • Repair Shops • Rental Fleets

WELDING  
EQUIPMENT








Multi Process Welding System



Engine-Driven Welding Equipment

# PIPEWORX WELDING SYSTEM\*

+ Input    

+ Output   

ITEM NUMBER	PIPEWORX WELDING SYSTEM		PIPEWORX POWER SOURCE ONLY	
	MIL-951381 230/460V	MIL-951382 575V	MIL-907382 230/460V	MIL-907384 575V
Process(es)	Stick (SMAW) TIG (GTAW) - DC Air Carbon Arc Cutting and Gouging (CAC-A) (3/8" carbons max.) MIG (GMAW) RMD™ Pro Pro-Pulse™ MIG (GMAW-P) Flux Cored (FCAW)			
Rated Output	450 A at 44 VDC, 100% Duty Cycle			
Output Range	Stick : 40 - 400 A DC TIG : 10 - 350 A MIG/Flux-Cored : 10/44V, 400 A			
Net Weight	Powersome: 102 kg (225 lb), Dual feeder: 41 kg (90 lb)			



\* Other custom packages available

The one-package pipe welding solution for pipe fabrication shops. Multiprocess capabilities include RMD Pro and Pro-Pulse which are optimized for steel and stainless steel pipe.

**Application include:** Pipe Welding • Process Piping

WELDING EQUIPMENT

# BLUE STAR® 145

+ Gasoline Engine  + Output  

ITEM NUMBER	MIL-907590
Process(es)	DC TIG (DC GTAW) Stick (SMAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models
Rated Output	145 Amps at 25 Volts, 20% Duty Cycle 100 Amps at 25 Volts, 60% Duty Cycle
Welding Amperage Range	40 - 145 Amps
Engine	YAMAHA, Gas: 9.1 HP at 3,600 RPM
Net Weight	140 kg (309 lb)
Generator Power	Accu-Rated Power: 4,500 Watts Peak; 4,000 Watts Continuous
Fuel Capacity	5 gal (18.9L)



MIL-907590

Reliable outdoor power! Great for farm, ranch, maintenance and hobbyist.



Engine-Driven Welding Equipment

# BLUE STAR® 185

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907591
Process(es)	DC TIG (DC GTAW) Stick (SMAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models
Rated Output	185 Amps at 25 Volts, 20% Duty Cycle 130 Amps at 25 Volts, 60% Duty Cycle
Welding Amperage Range	55 - 185 Amps
Engine	YAMA HA Gas: 10.2 HP at 3,600 RPM
Net Weight	143 kg (315 lb)
Generator Power 104DegF	Accu-Rated Power: 6,000 Watts Peak; 5,500 Watts Continuous Continuous Accu
Fuel RunTime Capacity	Fuel capacity: 5 gal (18.9L), Run time, will provide approx. 6.5 hours of run time with a continuous load of 3,000 watts Generator Power 104DegF. Run Time: Welding at 130 A at 30% Duty Cycle, the run time is approximately 15 hours.



MIL-907591

Reliable outdoor power! Great for construction, farm, ranch, maintenance and hobbyist.

WELDING  
EQUIPMENT



## Engine-Driven Welding Equipment

# BOBCAT™ 3 PHASE

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907505
Process(es)	MIG (GMAW) DC TIG (DC GTAW) Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models
Rated Output	CC/AC Stick/TIG: 200 Amps at 25 Volts CC/DC Stick/TIG: 210 Amps at 25 Volts CV/DC MIG/FCAW: 200 Amps at 20 Volts
Welding Amperage Range	CC/AC Stick/TIG: 50 - 200 A CC/DC Stick/TIG: 50 - 210 A CV/DC MIG/FCAW: 19-28 V
Engine	Gas Kohler CH 730, 23.5 HP at 3,600 RPM - 3 year warranty. Note: engine warranted separately by engine manufacturer
Net Weight	225 kg (495 lb)
Generator Power 104DegF	Accu-Rated Power: Three-Phase, 11,000 Watts Peak, 10,000 Watts Continuous, 480 VAC Single-Phase: 11,000 Watts Peak, 9,500 Watts Continuous, 120/240 VAC
Fuel RunTime Capacity	Fuel Capacity: 12 gal (45L) Run Time: welding with an 1/8" stick electrode, 20% duty cycle, expect about 20 hours of operation. Under a continuous 4,000 watt generator load, expect approximately 14 hours of run time.



MIL-907505

Designed for farm and ranch owners in need of single and three-phase power to run 480 volt three-phase pivot irrigation systems or provide backup power for home, farm and ranch.

WELDING  
EQUIPMENT

# BOBCAT™ 225

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907498001	MIL-907498 WITH CFGI
Process(es)	MIG (GMAW) DC TIG (DC GTAW) Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models	
Rated Output	CC/AC Stick/TIG: 150 Amps at 25 Volts CC/DC Stick/TIG: 225 Amps at 25 Volts CV/DC MIG/FCAW: 200 Amps at 20 Volts	
Welding Amperage Range	CC/AC Stick/TIG: 70 - 150 A CC/DC Stick/TIG: 50 - 225 A CV/DC MIG/FCAW: 19-28 V	
Engine	Gas Kohler CH 730, 23.5 HP at 3,600 RPM - 3 year warranty. Note: engines warranted separately by engine manufacturer	
Net Weight	220 kg (485 lb)	
Generator Power 104DegF	Accu-Rated Power: 11,000 Watts Peak, 9,500 Watts Continuous	
Fuel RunTime Capacity	Fuel Capacity: 12 gal (45L) Run Time: welding with an 1/8" stick electrode, 20% duty cycle, expect about 20 hours of operation. Under a continuous 4,000 watt generator load, expect approximately 14 hours of run time.	



MIL-907498

Cost-effective, multiprocess welder/generator primarily used for stick welding. Generator Power 104DegF is great for farm/ranch, stand-alone generator and maintenance/repair operations.





## Engine-Driven Welding Equipment

# BOBCAT™ 250

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907500 WITH CFGI	MIL-907502 WITH EFI
Process(es)	MIG (GMAW) DC TIG (DC GTAW) Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models	
Rated Output	CC/AC Stick/TIG: 250 Amps at 25 Volts CC/DC Stick/TIG: 250 Amps at 25 Volts CV/DC MIG/FCAW: 275 Amps at 25 Volts	
Welding Amperage Range	CC/AC Stick/TIG: 40 - 250 Amps, 40-275 w/ EFI CC/DC Stick/TIG: 40- 250 Amps, 40-275 w/ EFI CV/DC MIG/FCAW: 17-28 Volts	
Engine	Gas Kohler CH 730, 23.5 HP at 3,600 RPM - 3 year warranty. Note: engines warranted separately by engine manufacturer	
Net Weight	227 kg (501 lb)	
Generator Power 104DegF	Accu-Rated Power 11,000 Watts Peak, 9,500 Watts Continuous. EFI Models 12,000 Watts Peak, 10,500 Watts Continuous.	
Fuel RunTime Capacity	Fuel Capacity: 12 gal (45L) Run Time: welding with an 1/8" stick electrode, 20% duty cycle, expect about 20 hours of operation. Under a continuous 4,000 watt generator load, expect approximately 14 hours of run time.	



MIL-907502

Rugged welder/generator is great for stick and flux-cored welding and designed for maintenance/repair operations, construction, farm, ranch and generator use.

# BOBCAT™ 250 DIESEL

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907565 WITH CFGI
Process(es)	MIG (GMAW) AC TIG (AC GTAW) DC TIG (DC GTAW) Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models
Rated Output	CC Stick/TIG: 250 Amps at 25 Volts, 100% Duty Cycle CC/AC Stick/TIG: 275 Amps at 25 Volts, 60% Duty Cycle CV/DC MIG/FCAW: 250 Amps at 28 Volts, 100% Duty Cycle CV/DC MIG/FCAW: 275 Amps at 25 Volts, 60% Duty Cycle
Welding Amperage Range	40 - 275 Amps 17 - 28 Volts
Engine	Diesel: Kubota D722, 19 HP at 3,600 RPM. EPA Tier 4 Compliant. 2 Year Limited North American Mfg. Warranty
Net Weight	289 kg (638 lb)
Generator Power 104DegF	Accu-Rated Power, 11,000 Watts Peak, 9,500 Watts Continuous



MIL-907565

Rugged welder/generator is great for stick and flux-cored welding and designed for maintenance/repair operations, construction, farm, ranch and generator use.

WELDING  
EQUIPMENT



## Engine-Driven Welding Equipment

# TRAILBLAZER® 275

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907506 WITH CFGI
Process(es)	MIG (GMAW) DC TIG (DC GTAW) Pulsed TIG (GTAW-P) DC Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models Air Carbon Arc Cutting and Gouging (CAC-A)
Rated Output	CC/DC 275 Amps at 28 Volts, 100% Duty Cycle CV/DC 275 Amps at 28 Volts, 100% Duty Cycle
Welding Amperage Range	DC Stick 10–275 A, MIG/Flux-Cored 10–35 V, DC TIG 10–275 A, Pulsed TIG (peak) 10–275 A
Engine	Kohler, 23.5 HP twin-cylinder, four-cycle overhead valve, industrial air-cooled, gasoline (carburetor or EFI) or LP LP: Kohler CH 730, 21 HP at 3,600 RPM, 3 Year Mfg. Warranty Kohler
Net Weight	459 lb
Generator Power 104DegF	Peak: 12,000 Watts / 11,000 LP Continuous: 10,500 Watts / 9,500 LP
Dimensions	508 mm (20") Wide x 711 mm (28") High x 1029 mm (40.5") long



MIL-907506

Unbeatable arc performance, independent generator and weld outputs make this welder/generator perfect for construction, fabrication and maintenance/repair operations.

LP models available

WELDING  
EQUIPMENT

# TRAILBLAZER® 325

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907510 WITH CFGI
Process(es)	MIG (GMAW) DC TIG (DC GTAW) Pulsed TIG (GTAW-P) DC Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models Air Carbon Arc Cutting and Gouging (CAC-A)
Rated Output	CC/DC 325 Amps at 28 Volts, 100% Duty Cycle CV/DC 325 Amps at 28 Volts, 100% Duty Cycle
Welding Amperage Range	DC Stick 10–325 A, MIG/Flux-Cored 10–35 V, DC TIG 10–325 A, Pulsed TIG (peak) 10–325 A
Engine	Kohler, 23.5 HP twin-cylinder, four-cycle overhead valve, industrial air-cooled, gasoline (carburetor or EFI)
Net Weight	Trailblazer 325: 460 lb
Generator Power 104DegF	Peak: 12,000 watts Continuous: 10,500 watts Excel Power™ (optional): 120 V, 20 Amps, 60 Hz, 2400 watts pure Generator Power 104DegF at idle speed and while welding.
Dimensions	508 mm (20") Wide x 711 mm (28") High x 1029 mm (40.5") long



MIL-907510

Designed for the professional welder, our Trailblazer® welder/generators deliver unbeatable arc performance, the smoothest, most stable arc in the industry and an independent welder and Generator Power 104DegF system.

Models available with EFI, Excel™ Power



## Engine-Driven Welding Equipment

# TRAILBLAZER® 325 DIESEL

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907566 WITH CFGI
Process(es)	MIG (GMAW) DC TIG (DC GTAW) Stick (SMAW) Flux Cored (FCAW) Air Plasma Cutting and Gouging (PAC) with Optional Spectrum Models
Welding Amperage Range	10 - 325 Amps 10 - 35 Volts
Engine	Diesel: Kubota D902, 24.8 HP at 3,600 RPM, EPA Tier 4. Compliant, 2 Year Limited North American Mfg. Warranty.
Net Weight	281 kg (620 lb)
Generator Power 104DegF	Accu-Rated Power, 12,000 Watts Peak, 10,500 Watts Continuous
Fuel RunTime Capacity	Fuel Capacity 12 gal (45L) Run Time: welding with an 1/8" stick electrode, 20% duty cycle, expect about 24 hours of operation. Under a continuous 4,000 watt generator load, expect approximately 16 hours of run time.



MIL-907566

High output, unbeatable arc performance, independent generator and weld outputs make this welder/generator perfect for construction, fabrication and maintenance/repair operations.

Models with Excel™ Power available

# BIG BLUE® 300 PRO

+ Gasoline Engine



+ Output



ITEM NUMBER	MIL-907144 WITH CAT ENGINE
Process(es)	Stick (SMAW) MIG (GMAW) Flux-Cored (FCAW) DC TIG (GTAW) Air Carbon Arc (CAC-A) Rated: 3/16-inch (4.8 mm) carbons Capable: 1/4-inch (6.4 mm) carbons Air Plasma Cutting and Gouging with optional Spectrum® models
Rated Output	400 A, 21 VDC, 30% Duty Cycle 300 A, 32 VDC, 60% Duty Cycle
Welding Amperage Range	DC Stick: 40 - 410 A, DC TIG: 20-410 A, FCAW/MIG: 14 - 40 V
Engine	CAT, 21.7 HP at 1850 RPM EPA Tier 4i Compliant Kubota, 20.2 HP at 1850 RPM EPA Tier 4i Compliant Mitsubishi, 24.4 HP at 1850 RPM EPA Tier 4i Compliant
Net Weight	Caterpillar 499 kg (1,100 lb) Kubota 472 kg (1,040 lb) Mitsubishi 491 kg (1,083 lb)
Generator Power 104DegF	40°C) 12,000 Watts Peak 10,000 Watts Continuous
Fuel Capacity	11.5 gal. (43.5 L)
Dimensions	673 mm (26.25") wide x 813 mm (32") high x 1422 mm (56") long



MIL-907144

Low speed, compact diesel welder ideal for the construction contractor, independent rig owner or fleet manager.

Model available with Kubota or Mitsubishi engines

WELDING  
EQUIPMENT



Wire Feeders

# SUITCASE® X-TREME™ 8VS MODELS

ITEM NUMBER	MIL-951582	MIL-951583
Process(es)	MIG (GMAW) Flux Cored (FCAW)	
Input Power	Operates on open-circuit voltage and arc voltage 14-48 VDC/110 Max OCV	
Wire Dia. Capacity	Solid Wire: 0.6-1.4 mm (0.023-0.052") Flux Cored: 0.6-2.0 mm (0.030-5/64")	
Wire Feed Speed	50 - 780 IPM (1.3 - 19.8 m/min) Actual range in CC mode is dependent on arc voltage	
Net Weight	13 kg (28 lb)	
Max. Spool Size Capacity	203 mm (8"), 6.4 kg (14 lb)	


**MIL-951582**

Taking portable welding to the extreme - the 8VS and 12 VS have every feature you will ever need.

**Application include:** Industrial Applications • Shipbuilding • Construction • Heavy Manufacturing • Rental Fleets

WELDING  
EQUIPMENT

# SUITCASE® X-TREME™ 12VS MODELS

ITEM NUMBER	MIL-951543	MIL-951544
Process(es)	MIG (GMAW) Flux Cored (FCAW)	
Input Power	Operates on open-circuit voltage and arc voltage 14-48 VDC/110 Max OCV	
Wire Dia. Capacity	Solid Wire: 0.6-1.4 mm (0.023-0.052") Flux Cored: 0.8-2.0 mm (0.030-5/64")	
Wire Feed Speed	50 - 780 IPM (1.3 - 19.8 m/min) Actual range in CC mode is dependent on arc voltage	
Net Weight	15.9 kg (35 lbs)	
Max. Spool Size Capacity	305 mm (12"), 20.4 kg (45 lb)	


**MIL-951543**

Taking portable welding to the extreme - the 8VS and 12 VS have every feature you will ever need.

**Application include:** Industrial Applications • Shipbuilding • Construction • Heavy Manufacturing • Rental Fleets



# SPOOLMATE™ 100

ITEM NUMBER	MIL-300371
Process(es)	MIG (GMAW) with aluminum, mild and stainless steels
Welding Output Rating	135 A at 30% Duty Cycle
Wire Dia. Capacity	0.8 - 0.9 mm (0.030 - 0.035") 4043 series aluminum only 0.6 - 0.9 mm (0.023 - 0.035") steel, and stainless steel
Wire Feed Speed	MM 140: 5-365 IPM MM 180: 65-625 IPM
Net Weight	2.3 kg (5 lb) with 12 ft cable assembly
Max. Spool Size Capacity	102 mm (4")



MIL-300371

Your choice for exceptional aluminum welding results for do-it-yourself projects.

**Application include:** Home Hobbyist Applications • Aluminum Fabrication

• Home Maintenance and Repair • Auto and Marine Repair

WELDING  
EQUIPMENT

# SPOOLMATE™ 200

ITEM NUMBER	MIL-300497
Process(es)	MIG (GMAW) with aluminum and other soft alloy wires
Welding Output Rating	160 A at 60% Duty Cycle
Wire Dia. Capacity	0.8 - 0.9 mm (0.030 - 0.035") aluminum 0.6 - 0.9 mm (0.023 - 0.035") mild and stainless steel
Wire Feed Speed	70-875 IPM
Net Weight	5 kg (11 lb) with 20 ft cable assembly
Max. Spool Size Capacity	102 mm (4")



MIL-300497

Highly reliable and economical spool gun with excellent feeding to weld aluminum. Ideal For use with the Millermatic® 212 Auto-Set™.

**Application include:** Home Hobbyist Applications • Aluminum Fabrication

• Home Maintenance and Repair • Auto and Marine Repair





## Wire Feeders

# SPOOLMATIC® 15A

ITEM NUMBER	MIL-195156
Process(es)	MIG (GMAW) with aluminum and other soft alloy wire
Welding Output Rating	200 A at 100% Duty Cycle
Wire Dia. Capacity	0.6 - 1.6 mm (0.023 - 1/16") aluminum wire and hard wire up to 1.1 mm (0.045")
Wire Feed Speed	70 - 875 IPM (1.8 - 22.2 m/min)
Net Weight	4.1 kg (9 lb) with cable assembly
Max. Spool Size Capacity	102 mm (4")
Cable Ass'y Length	4.6 m (15')



MIL-195156

The professional's choice for exceptional aluminum welding results in industrial or commercial applications.

**Application include:** Manufacturing Industrial • Light-duty Aluminum Fabrication • Sign Manufacturing • Auto Shop

WELDING  
EQUIPMENT

# SPOOLMATIC® 30A

ITEM NUMBER	MIL-130831
Process(es)	MIG (GMAW) with aluminum and other soft alloy wire
Welding Output Rating	200 A at 100% Duty Cycle
Wire Dia. Capacity	0.8 - 1.6 mm (0.030 - 1/16") aluminum wire and hard wire up to 1.1 mm (0.045")
Wire Feed Speed	70 - 875 IPM (1.8 - 22.2 m/min)
Net Weight	6.4 kg (14 lb) with cable assembly
Max. Spool Size Capacity	102 mm (4")
Cable Ass'y Length	9.1 m (30')



MIL-130831

The professional's choice for exceptional aluminum welding results in industrial or commercial applications.

**Application include:** Manufacturing Industrial • Light-duty Aluminum Fabrication



## 70 SERIES

ITEM NUMBER	SINGLE WIRE MODEL		DUAL WIRE MODEL	
	S-74S Model	MIL-951196 MIL-951197	D-74S Model	MIL-951203 MIL-951204
	S-74D Model	MIL-951198 MIL-951199	D-74D Model	MIL-951205 MIL-951206
	S-74DX Model	MIL-951200 MIL-951201 MIL-951202	D-74DX Model	MIL-951206 MIL-951207
Process(es)	MIG (GMAW) Flux Cored (FCAW) Pulse MIG (GMAW-P) with optional MPa power source			
Input Power	24 VAC, 10 A, 50/60 Hz			
Wire Dia. Capacity	Hard Wire 0.9 - 2.0 mm (0.035 - 5/64") Aluminum 0.9 - 1.6 mm (0.035 - 1/16")			
Wire Feed Speed*	50 - 780 IPM (1.3 - 19.8 m/min) - standard motor			
Net Weight	26 kg (58 lb)		39.5 kg (87 lb)	
Max. Spool Size Capacity	27 kg (60 lb) coil - with optional wire reel assembly MIL-108008			

\* 20 - 400 IPM (0.5 - 10.2 m/min) - with optional low speed motor

\* 92 - 1435 IPM (2.3 - 36.6 m/min) - with optional high speed motor


**MIL-951196**

Raising the bar for industrial-class wire feeders with the traditional features, plus enhanced flexibility provided by features such as trigger hold, dual tension control, automatic run-in, and toolless rotatable drive.

**Application include:** Manufacturing Industrial • Heavy Manufacturing • Metal Fabrication • Construction • Light Manufacturing

## 70 SERIES MPA PLUS

ITEM NUMBER	SINGLE WIRE MODEL MIL-951291	DUAL WIRE MODEL MIL-951292
Process(es)	MIG (GMAW) Flux Cored (FCAW) Pulse MIG (GMAW-P) with optional MPa power source	
Input Power	24 VAC, 10 A, 50/60 Hz	
Wire Dia. Capacity	Hard Wire 0.9 - 2.0 mm (0.035 - 5/64") Aluminum 0.9 - 1.6 mm (0.035 - 1/16")	
Wire Feed Speed	50 - 780 IPM (1.3 - 19.8 m/min)	
Net Weight	26 kg (58 lb)	39.5 kg (87 lb)
Max. Spool Size Capacity	27 kg (60 lb) coil - with optional wire reel assembly MIL-108008	


**MIL-951291**

The great features and reliability of the 70 series with added capability of push pull aluminum and more when optimized with the Invision MPa or XMT MPa power sources.



Fume extraction

# FILTAIR 130® PORTABLE FUME EXTRACTOR

+ Input   

ITEM NUMBER	MIL-300595
Process(es)	MIG (GMAW) TIG (GTAW) Stick (SMAW) Flux Cored (FCAW)
Filter Media	1.49 square meters (16 square feet)
Nominal Airflow	Accu-Rated, 132 CFM (62L/sec)
Engine	1 HP
Sound Level	68.5 dBA at 1.5 m (5')
Net Weight	92 kg (46 lb)
Dimensions	H: 584 mm (23") W: 305 mm (12") D: 305 mm (12")



MIL-300595

Portable system designed for capturing weld fume particulate. The powerful high vacuum system with a MERV 16 FilTek XL, cleanable filter is ideal for contractors, maintenance and repair, and light fabrication.

8' hose and filter included. Replacement filter MIL-300671

WELDING  
EQUIPMENT

# FILTAIR® 400

+ Input   

ITEM NUMBER	MIL-300894
Process(es)	MIG (GMAW) TIG (GTAW) Stick (SMAW) Flux Cored (FCAW)
Filter Media	10 square meters (108 square feet)
Nominal Airflow	400 CFM (189 L/sec.)
Engine	8.85 HP
Sound Level	74 dBA at 1.5 m (5')
Net Weight	250 kg (551 lbs)
Dimensions	H: 1372 mm (54") W: 660 mm (26") D: 1219 mm (48")
Accessories	Replacement filter MIL-300925 17' collection hose MIL-300672 34' collection hose MIL-300673



MIL-300894

The FILTAIR 400 High Vacuum provides reliable fume extraction for the Industrial manufacturing environment.



GMAW Welding Equipment (MIG)

# POWER MIG® 140C

+ Input **115V** **1 PHASE** **60 Hz** + Output **DC** **CV**

ITEM NUMBER	LIN-K24712
Input Power	120/1/60
Rated Output	90A/19.5V/20%
Input Current	20A
Output Range	30-140A DC, Max. OCV: 33 V
Solid Wire Size Range	0.6 - 0.9 mm (0.025 - 0.035")
Cored Wire Size Range	0.8 - 0.9 mm (0.030 - 0.035")
Wire Feed Speed Range	50-500 IPM (1.3 - 12.7 m/min)
Dimensions (H x W x D)	357 mm x 258 mm x 472 mm (14" x 10.15" x 18.6")
Net Weight	26 kg (58 lb)

Optional Accessories			
LIN-K32691	Magnum 100SG Spool Gun	LIN-K23771	Protective Cover
GAS-ALMIG16	ALMIG Shielding gas*	BLU-38977830	LA S-6 Wire 0.8 mm (0.030") *
MET-RV130ALRED	Machine & Cylinder Cart		

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.



LIN-K24712

Select Power MIG 140 for your home projects and repair, sheet metal, autobody work, farm and small shop welding.

WIRE DIAMETER	0.6 mm (0.025")	0.8 mm (0.030")	0.9 mm (0.035")
Contact Tip	LIN-KP1125	LIN-KP1130	LIN-KP1135
Diffuser	LIN-KP3550	LIN-KP3550	LIN-KP3550
Feed Roll - V-Smooth	LIN-KP25291	LIN-KP25291	LIN-KP25292
Feed Roll - V-Knurled		LIN-KP25293	LIN-KP25293

## NOZZLE ID

LIN-KP2150F Nozzle - Flush 12.7 mm (1/2") LIN-KP21T62 Nozzle - Recessed 15.9 mm (5/8")  
LIN-KP21T50 Nozzle - Recessed 12.7 mm (1/2") LIN-KP21T37 Nozzle - Recessed 9.5 mm (3/8")

# POWER MIG® 180C

+ Input **208V** **230V** **1 PHASE** **60 Hz** + Output **DC** **CV**

ITEM NUMBER	LIN-K24732	LIN-K30182 180 DUAL
Input Power	208/230/1/60	120 or 208/230/1/60
Rated Output	208 V: 130A/17V/30%	230 V: 130A/20V/30%
Input Current	20A	
Output Range	30-180A DC, Max. OCV: 34 V	
Solid Wire Size Range	0.6 - 0.9 mm (0.025 - 0.035")	
Cored Wire Size Range	0.8 - 1.2 mm (0.030 - 0.045")	
Wire Feed Speed Range	50-500 IPM (1.3 - 12.7 m/min)	
Dimensions (H x W x D)	357 mm x 258 mm x 472 mm (14" x 10.15" x 18.6")	
Net Weight	30 kg (66 lb)	

Optional Accessories			
LIN-K32691	Magnum 100SG Spool Gun	LIN-K23771	Protective Cover
GAS-ALMIG16	ALMIG Shielding gas*	BLU-38977830	LA S-6 Wire 0.8 mm (0.030") *
MET-RV130ALRED	Machine & Cylinder Cart		

\* General purpose wire / gas combination for mild steel GMAW.  
Please contact Air Liquide for advice on more specific needs.



LIN-K24732

Select Power MIG 180 for your home projects and repair, farm use, autobody shop, and light fabrication.

WIRE DIAMETER	0.6 mm (0.025")	0.8 mm (0.030")	0.9 mm (0.035")
Contact Tip	LIN-KP1125	LIN-KP1130	LIN-KP1135
Diffuser	LIN-KP3550	LIN-KP3550	LIN-KP3550
Feed Roll - V-Smooth	LIN-KP25291	LIN-KP25291	LIN-KP25292
Feed Roll - V-Knurled		LIN-KP25293	LIN-KP25293

## NOZZLE ID

LIN-KP21T62 Nozzle - Recessed 15.9 mm (5/8") LIN-KP21T37 Nozzle - Recessed 9.5 mm (3/8")  
LIN-KP21T50 Nozzle - Recessed 12.7 mm (1/2") LIN-KP2150F Nozzle - Flush 12.7 mm (1/2")



GMAW Welding Equipment (MIG)

# POWER MIG® 256

+ Input + Output

ITEM NUMBER	LIN-K30682	LIN-K30681	LIN-K3069
Input Power	230/460/575/1/60	208/230/1/60	
Rated Output	250A/26V/40%		
Input Current	50/24/19A	56/52A	
Output Range	30-300A DC, Max. OCV: 40 V		
Solid Wire Size Range	0.6 - 1.2 mm (0.025" - 3/64")		
Cored Wire Size Range		0.035" - 0.045"	
Wire Feed Speed Range	50-700 IPM (1.3 - 17.7 m/min)		
Dimensions (H x W x D)	808 mm x 480 mm x 985 mm (31.8" x 18.9" x 38.8")		
Net Weight	100 kg (220 lb)		

## Optional Accessories

<b>GAS-BLU822</b> Blueshield 8	<b>BLU-37963175</b> LA-T-91LF 1.6 mm (1/16") Wire *
<b>LIN-K21531</b> Aluminum Feeding Kit (1.2 mm)	<b>LIN-K17021</b> Dual Cylinder Mounting Kit

\* General purpose wire / gas combination for mild steel FCAW. Please contact Air Liquide for advice on more specific needs



Setting standards for MIG and Flux core welding in light industrial job shop fabrication, maintenance and repair work.

WIRE DIAMETER	0.8 mm (0.030")	0.9 mm (0.035")	1.2 mm (0.045")
Contact Tip	LIN-KP1430	LIN-KP1435	LIN-KP1445
Liner	LIN-KP422515	LIN-KP44354515	LIN-KP44354515
Diffuser	LIN-KP54A	LIN-KP54A	LIN-KP54A
Feed Roll - V-Smooth	LIN-KP1696030S	LIN-KP1696035S	LIN-KP1696045S
Feed Roll - V-Knurled		LIN-KP1697035C	LIN-KP1697045C

## NOZZLE ID

<b>LIN-KP2337</b> Nozzle - Recessed 9.5 mm (3/8")	<b>LIN-KP2337F</b> Nozzle - Flush 9.5 mm (3/8")
<b>LIN-KP2350</b> Nozzle - Recessed 12.7 mm (1/2")	<b>LIN-KP2350F</b> Nozzle - Flush 12.7 mm (1/2")
<b>LIN-KP2362F</b> Nozzle - Flush 15.9 mm (5/8")	<b>LIN-KP2362</b> Nozzle - Recessed 15.9 mm (5/8")

# POWER MIG® 350MP

+ Input + Output

ITEM NUMBER	LIN-K24032
Input Power	208/230/460/575/1/60
Rated Output	300A/32V/60%
Input Current	72/62/31/25A
Output Range	5-350A DC, Max. OCV: 67 V
Solid Wire Size Range	0.6 - 1.2 mm (0.023 - 0.045")
Cored Wire Size Range	0.9 - 1.2 mm (0.035 - 0.045")
Wire Feed Speed Range	50-700 IPM (1.3 - 17.7 m/min)
Dimensions (H x W x D)	808 mm x 480 mm x 985 mm (31.8" x 18.9" x 38.8")
Net Weight	116 kg (255 lb)

## Optional Accessories

<b>GAS-BLU822</b> Blueshield 8	<b>LIN-K23781</b> Medium canvas cover
<b>BLU-37963175</b> LA-T-91LF 1.6 mm (1/16") Wire *	<b>LIN-K21531</b> Aluminum Feeding Kit (1.2 mm)
<b>LIN-K17021</b> Dual Cylinder Mounting Kit	

\* General purpose wire / gas combination for mild steel FCAW. Please contact Air Liquide for advice on more specific needs



More than a Machine, Lincoln Power MIG 350MP delivers more welding processes! One-Pak® systems available for aluminum applications 3-in-1 welder.

WIRE DIAMETER	0.8 mm (0.030")	0.9 mm (0.035")	1.2 mm (0.045")
Contact Tip	LIN-KP2744030	LIN-KP2744035	LIN-KP2744045
Diffuser	LIN-KP27461	LIN-KP27461	LIN-KP27461
Feed Roll - V-Smooth	LIN-KP1696030S	LIN-KP1696035S	LIN-KP1696045S
Feed Roll - V-Knurled		LIN-KP1697035C	LIN-KP1697045C

## NOZZLE ID

<b>LIN-KP2742150F</b> Nozzle - Flush 12.7 mm (1/2")	<b>LIN-KP2742150R</b> Nozzle - Recessed 12.7 mm (1/2")
<b>LIN-KP2742162F</b> Nozzle - Flush 15.9 mm (5/8")	<b>LIN-KP2742162R</b> Nozzle - Recessed 15.9 mm (5/8")





GTAW Welding Equipment (TIG)

# PRECISION TIG® 225

+ Input + Output

ITEM NUMBER	LIN-K25332	LIN-K25351 WELDER READY-PAK	LIN-K25352 WELDER READY-PAK® W/CART
Input Power	460/575/1/60	208/230/1/60	
Rated Output	90A/23.4V/100%		
Input Current	18/15A	42/39A	
Output Range	5-230A AC, 5-230A DC, Max. OCV: 75 V		
Dimensions (H x W x D)	526 mm x 368 mm x 650 mm (20.7" x 14.5" x 25.6")		794 mm x 503 mm x 966 mm (31.2" x 19.8" x 38")
Net Weight	87 kg (192 lb)	96 kg (212 lb)	117 kg (258 lb)

Optional Accessories			
LIN-K23781	Medium canvas cover	BLU-10340816	Blueshield 630-308L 1.6 mm (1/16") rods
LIN-K23481	Understorage Cart		
3MC-040011231	3M Speedglas 9002X	GAS-ALTIG16	ALTIG Shielding gas*



LIN-K25332

Machine only

Lincoln Precision TIG® 225 The power to perform for general fabrication, automotive/motorsport sports, vocational schools or serious hobby work.

## Features

- **5-230 amps** is the widest welding range in its class.
- **Patented Micro-Start™ II Technology** delivers extremely stable low amperage starting, welding and cratering for AC and DC welding.
- **FREE TIG Pulser** – Optimal heat input control results in reduced warping and burnthrough on thin materials and improved appearance.
- **Excellent Stick Welder** – even with Fleetweld® 5P (E6010).
- **AC Auto Balance®** automatically sets the optimal cleaning vs. penetration levels for great looking aluminum welds.
- **115 volt auxiliary power** receptacles with 20 amp service reliably powers water coolers or other tools (208/230V model only, all other models 6 amps).
- **Standard torch parts storage** compartment and cable hanger keeps you organized.
- **Fan-As-Needed™ (F.A.N.)** prevents overheating. F.A.N. reduces power consumption noise, motor wear and dust in the machine.
- **CSA C/US** certified.

# PRECISION TIG 275

+ Input + Output

ITEM NUMBER	LIN-K26181 WELDER READY-PAK®	LIN-K26191	LIN-K26192	LIN-CK1825-2PA WELDER ONE-PAK®
Input Power	208/230/ 460/1/60			460/575/1/60
Rated Output	275A/31V/40%			
Input Current	104/94/47A			47/38A
Output Range	2-340A AC, 2-340A DC			
Dimensions (H x W x D)	1262 mm x 711 mm x 1041 mm (49.7" x 28" x 41")		787 mm x 559 mm x 660 mm (31" x 22" x 26")	
Net Weight	291 kg (641 lb)		180 kg (397 lb)	

Optional Accessories			
LIN-K18281	Under-Cooler Cart Water Cooler	BLU-10340816	Blueshield 630-308L 1.6 mm (1/16") rods
LIN-K26211	Advanced Control Panel	GAS-ALTIG16	ALTIG Shielding gas*
3MC-040011231	3M Speedglas 9002X		



LIN-K26181

Maximum Control serious code-level quality for fabrication, aerospace, production, motorsports or vocational education!

## Features

- **Patented Micro-Start™ II Technology** - Delivers extremely stable low amperage starting, welding and cratering for both AC and DC welding.
- **AC Auto Balance®** - Automatically sets the optimal cleaning vs. penetration levels for great looking aluminum welds.
- **High duty cycles** - 275 amps at 40% duty cycle.
- **Widest output range in its class** - 2-340 amps for both AC and DC.
- **Add an optional Under-Cooler Cart** - For extra storage and water-cooled applications.
- **Built-in storage compartment** - With removable tray for torch consumables.
- **Excellent stick welder** - Even with Fleetweld® 5P (E6010) with new Automatic Hot Start™ and Auto Adaptive Arc Force™ controls.
- **115 volt auxiliary power receptacles** - Great for powering an optional water cooler or power tools.
- **Water-cooled torch connections with no adapters required** - Side mounted, out of the way, and well protected.



GTAW Welding Equipment (TIG)

# SQUAREWAVE TIG 175

+ Input

+ Output

ITEM NUMBER	LIN-K14785
<b>Input Power</b>	208/230/1/60
<b>Rated Output</b>	150A/26V/25% Duty Cycle
<b>Input Current</b>	64/57A
<b>Output Range</b>	DC: 10-175A, AC: 10-175A Max. OCV: 59V DC, Max. OCV: 74V AC
<b>Dimensions (H x W x D)</b>	495 x 348 x 635 mm (19.5 x 13.7 x 25")
<b>Net Weight</b>	84 kg (185 lb)

## Optional Accessories

LIN-K9633	Hand Amptrol™	BLU-10340816	Blueshield 630-308L 1.6 mm (1/16") rods
LIN-K31271	Wireless Pedal		
LIN-K870	Foot Amptrol™	GAS-ALTIG16	ALTIG Shielding gas*


**LIN-K14785**

Machine only

Back by popular demand, this great little AC/DC TIG and stick welder delivers classic smooth DC and stable AC square wave welding output – outstanding TIG performance as well as stick welding – It's like getting a stick welder for FREE!

## Features

### Top TIG Welding Performance

- Square Wave™ Technology Delivers a low peak current and fast positive / negative transition time. High frequency arc starting is used for both AC and DC TIG welding modes. You experience reduced tungsten spitting, tungsten electrode erosion and a smooth, stable AC welding arc.
- Standard Auto Balance® control automatically delivers optimal mix of cleaning action vs. penetration.
- Excellent low amperage starting performance – down to 10 amps. Standard Foot Amptrol™

### Standard foot Amptrol™

- Remotely controlling your current level is an added expense with other TIG welders in this class. Enhanced TIG Torch Handling

### Enhanced TIG Torch Handling

- Includes a rugged Series 17 torch with Ultra-Flex™ cable. The torch is detachable for easy repair or to use optional torches for especially tight spaces or unusual applications. Shielding gas pre-flow and post-flow

### Shielding gas pre-flow and post-flow

- Built-in 0.50 second pre-flow and 15 second post-flow timers purge and protect the weld and tungsten.

WELDING  
EQUIPMENT

# PRECISION TIG 375

+ Input

+ Output

ITEM NUMBER	LIN-K26221	LIN-K26222	LIN-K26241 READY-PAK®	LIN-CK19032P ONE-PAK®
<b>Input Power</b>	208/230/ 460/1/60	230/460/ 575/1/60	208/230/ 460/1/60	208/230/460/ 575/1/60
<b>Rated Output</b>	375A/35V/40%			
<b>Input Current</b>	112/102/51A/41 with PFC			
<b>Output Range</b>	2-420A AC, 2-420A DC, Max. OCV: 80V			
<b>Dimensions (H x W x D)</b>	1262 mm x 711 mm x 1041 mm (49.7" x 28" x 41")		787 mm x 559 mm x 660 mm (31" x 22" x 26")	
<b>Net Weight</b>	230 kg (507 lb)		340 kg (751 lb)	230 kg (507 lb)

## Optional Accessories

LIN-K18311	Power Factor Correction Kit	BLU-10340816	Blueshield 630-308L 1.6 mm (1/16") rods
LIN-K26211	Advanced Control Panel		
3MC-04001231	3M Speedglas 9002X	GAS-ALTIG16	ALTIG Shielding gas*


**LIN-K26221**

Machine only

Maximum Control serious code-level quality for fabrication, aerospace, production, motorsports or vocational education!

## Features

- **Patented Micro-Start™ II Technology** - Delivers extremely stable low amperage starting, welding and cratering for both AC and DC welding.
- **Selectable welding modes** - Such as high frequency, scratch start, and Touch Start TIG®.
- **High duty cycles** - 375 amps at 40% duty cycle.
- **Widest welding range in its class** - 2-420 amps for both AC and DC.
- **Advanced Control Panel** - TIG pulser allows you to control heat input for any weld.
- **Standard power factor correction capacitors** - Lower input currents when welding at higher output.
- **Excellent stick welder** - Even with Fleetweld® 5P (E6010) with new Automatic Hot Start™ and Auto Adaptive Arc Force™ controls.
- **115 volt auxiliary power receptacles** - Great for powering an optional water cooler or power tools.
- **Add an optional Under-Cooler Cart** - For extra storage and water-cooled applications.
- **Built-in storage compartment** - For torch consumables.
- **Water-cooled torch connections with no adapters required** - Side mounted, out of the way, and well protected.



GTAW Welding Equipment (TIG)



SMAW Welding Equipment (Stick)

# INVERTEC V155 S

+ Input

+ Output

ITEM NUMBER	LIN-K26051	LIN-K26061 READY-PAK®
Input Power	120/1/50/60, 230/1/50/60	
Rated Output	Stick: 75 A/23 V/ 100% Duty Cycle TIG: 105 A/ 14.2 V/ 100% Duty Cycle	
Input Current	24 A/ 21.5A @ Rated Output	
Output Range	5-155A DC, Max. OCV: 75 V	
Dimensions (H x W x D)	288 mm x 158 mm x 392 mm (11.3" x 6.2" x 15.4")	
Net Weight	6.7 kg (14.7 lb)	



Stick model shown. TIG Ready-Pak is also available.

Weighing under 15 lbs (6.8 kg) Invertec V155 S can take to the most demanding job site. Portable, Professionnal, Rugged, Affordable.

# INVERTEC V275-S

+ Input

+ Output

ITEM NUMBER	LIN-K22691	LIN-K22693
	STICK WELDER (TWECO)®	
Input Power	208/230/460/575/1/3/60	
Rated Output	275A/29-31V/35% 275A/31V/35%	
Input Current	68/67/38/31 A 68/37/19/16 A	
Output Range	5-275A DC	
Dimensions (H x W x D)	345 mm x 229 mm x 514 mm (13.6" x 9" x 20.25")	
Net Weight	24.5 kg (54 lb)	

\* Tweco model has Tweco® style output connectors.



LIN-K22691

Ideal for outdoor construction sites. IP23s rated and equipped with water resistant features. Up to 275 Amps of output giving you access to a great number of stick electrodes and outstanding E6010 performance.


Multi Process Welding  
System


Engine-Driven Welding Equipment

# INVERTEC V350 PRO

+ Input + Processus : - Stick - Fil fourré  
- TIG (c.c.) - Gougeage  
- MIG

+ Output

ITEM NUMBER	LIN-K17286	LIN-K172813 (FACTORY MODEL - TWECO)	LIN-K17285 (CONSTRUCTION MODEL)	LIN-K17287 (ADVANCED PROCESS MODEL)	LIN-K24372 (FACTORY MODEL) READY-PAK® W/ LF-72 WIRE FEEDER	LIN-CK18432P ONE-PAK® W/ LF-72 WIRE FEEDER
Input Power	200-208/230/ 380-415/460/ 575/1/3/50/60	208/230/415/ 460/575/1/3/ 50/60	200-208/230/ 380-415/460/ 575/1/3/50/60	208/230/415/ 460/575/1/3/ 50/60	200-208/230/380-415/ 460/575/1/3/50/60	
Rated Output	350A/34V/60%					
Input Current	3 PHASE: 50/42/28-26/23/18A, 1 PHASE: 94/85/54/42/37A					
Output Range	5-425A DC, Max. OCV: 80V DC					
Dimensions (H x W x D)	376 mm x 338 mm x 709 mm (14.8" x 13.3" x 27.9"), applies to machine only					
Net Weight	36.7 kg (81 lb)	37 kg (81.5 lb)	36.7 kg (81 lb)		167.8 kg (370 lb)	



One-Pak® shown

Efficient, lightweight, portable solution for training, fabrication or construction applications! Exceptional multi-process capability.

# OUTBACK® 145

+ Gasoline Engine + Output

ITEM NUMBER	LIN-K27072
Rated Output	100A DC/25V/60%, 125A DC/25V/30%
Output Range	50-145A DC
Generator Output (AC)	4750 watts peak, 4250 watts continuous
Engine	Kohler® CH395, 1 cylinder
HP and speed	8.9 @ 3600 RPM
Dimensions (H x W x D)	651 mm x 553 mm x 800 mm (25.6" x 21.8" x 31.5")
Net Weight	106 kg (234 lb)



LIN-k27072

Portable DC stick welding and AC Generator Power 104DegF. Ideal for service trucks, fence contractors, maintenance crews, farmers, ranchers.





## Engine-Driven Welding Equipment

# OUTBACK® 185

+ Gasoline Engine



+ Output



ITEM NUMBER	LIN-K27062
Rated Output	130A DC/25V/60%, 150A DC/25V/20%
Output Range	50-185A DC
Generator Output (AC)	5700 watts peak, 5200 watts continuous
Engine	Kohler CH440, 1 cylinder
HP and speed	14 HP @ 3600 RPM
Dimensions (H x W x D)	651 mm x 553 mm x 800 mm (25.6" x 21.8" x 31.5")
Net Weight	133 kg (295 lb)



LIN-K27062

Portable DC stick welding and AC Generator Power 104DegF. Ideal for service trucks, fence contractors, maintenance crews, farmers, ranchers.

# RANGER® 305G

+ Gasoline Engine



+ Output



ITEM NUMBER	LIN-K17265	LIN-K23532 ONE-PAK®	LIN-K39281 RANGER 305G EFI WITH ELECTRIC FUEL PUMP
Rated Output	305A/29V/100%		
Output Range	14-29V CV, 20-250A DC TIG, 20-305A DC, 40-300A Pipe		
Generator Output (AC)	10500 watts peak, 9500 watts continuous		
Engine	Kohler OHV Command CH730		
HP and speed	23 @ 3600 RPM		
Dimensions (H x W x D)	759 mm x 546 mm x 1073 mm (29.9" x 21.5" x 42.3")		
Net Weight	231 kg (510 lb)		



LIN-K17265

Rugged, Dependable, LINCOLN Ranger 305G, 305 LPG, 305 D features totally enclosed case for maximum protection. Lincoln Electric Chopper Technology provides easy starts, a smootharc, low spatter and excellent bead appearance.

WELDING  
EQUIPMENT





Engine-Driven Welding Equipment

# RANGER 305 LPG

+ Gasoline Engine



+ Output



ITEM NUMBER	LIN-K29371	LIN-K29441 ONE-PAK®
Rated Output	300A/25V/100%	
Output Range	14-29V CV, 20-250A DC TIG, 20-300A DC, 40-300A Pipe	
Generator Output (AC)	10000 watts peak, 9000 watts continuous	
Engine	Kohler OHV Command CH730 LPG, 2 cylinder	
HP and speed	25 @ 3600 RPM	
Dimensions (H x W x D)	759 mm x 546 mm x 1073 mm (29.9" x 21.5" x 42.3")	
Net Weight	217 kg (480 lb)	


**LIN-K29371**

Rugged, Dependable, LINCOLN Ranger 305 LPG has powerful multi-process capability: Stick, TIG, MIG, flux-cored and gouging.

WELDING  
EQUIPMENT

# RANGER® 305 D

+ LPG Engine



+ Output



ITEM NUMBER	LIN-K17274	LIN-K23525 ONE-PAK®
Rated Output	305A/29V/100%	
Output Range	20-305A DC, 40-300A Pipe, 20-250A DC TIG, 14-29V CV	
Generator Output (AC)	10000 watts peak, 9500 watts continuous	
Engine	Kubota D722 EPA Tier 4, 3 cylinder, Diesel	
HP and speed	18.8 @ 3600 RPM	
Dimensions (H x W x D)	759 mm x 546 mm x 1327 mm (29.9" x 21.5" x 52.3")	
Net Weight	316 kg (698 lb)	


**LIN-K17274**

Rugged, Dependable, LINCOLN Ranger 305 D is a powerful multi-process stick, TIG, wire and pipe welding engine-driven welder that is ready for all day everyday performance.



## Engine-Driven Welding Equipment

# RANGER 225

+ LPG Engine

**23**  
HP

+ Output

**CC**
**DC**
**CV**

ITEM NUMBER	LIN-K28571
Rated Output	225A DC CC/25V/ 40% 210A DC CC/25V/100% 200A DC CV/20V/100%
Output Range	50-225A DC 15-25V CV Welding
Generator Output (AC)	10,500 Watts Peak AC Generator 9,000 Watts Continuous AC Generator
Engine	Kohler®
HP and speed	23 @ 3,600 RPM
Dimensions (H x W x D)	759 mm x 546 mm x 1073 mm (29.9" x 21.5" x 42.3")
Net Weight	233 kg (514 lb)


**LIN-K28571**

A great choice for getting the job done! For construction contractors, maintenance crews, farmers or ranchers, the Ranger® 225 does a variety of basic welding jobs. And with 10,500 watts of peak AC Generator Power 104DegF, it handles a variety of other jobs: lights, grinder, Lincoln Electric inverter, plasma cutter (separate air supply needed) or emergency power. At your service – everyday!™

# CLASSIC® 300D

+ Diesel Engine

**35.5**  
HP

+ Output

**CC**
**DC**
**CV**

ITEM NUMBER	LIN-K16439	LIN-K164311	LIN-K16438 W/WIRE FEED MODULE
Rated Output	250A/30V/100%, 300A/32V/60%		
Output Range	40-350A DC		
Generator Output (AC)	3000 watts AC		
Engine	Kubota V2403M Diesel EPA Tier 4i	Perkins 404D-22 Diesel EPA Tier 4i	Perkins 404D-22 Diesel EPA Tier 4i
HP and speed	35.5 @ 1800 RPM	32.7 @ 1800 RPM	
Dimensions (H x W x D)	942 mm x 610 mm x 1689 mm (37.1" x 24" x 66.5")		
Net Weight	599 kg (1320 lb)	614 kg (1354 lb)	630 kg (1389 lb)


**LIN-K16439**

Recommended for pipeline, construction and maintenance welding. The classic 300 D has proven rugged construction. Pure DC generator welding output.



## Engine-Driven Welding Equipment

# SAE-300®

+ Diesel Engine **32.7 HP**

+ Output **CC** **DC** **CV**

ITEM NUMBER	LIN-K30032
Rated Output	250A/30V/100%, 300A/32V/60%
Output Range	50-390A DC
Generator Output (AC)	3000 watts
Engine	Perkins® 404D-22 Diesel EPA Tier 4i, 4 cylinder
HP and speed	32.7 @ 1800 RPM
Dimensions (H x W x D)	942 mm x 610 mm x 1651 mm (37.1" x 24" x 65")
Net Weight	642 kg (1416 lb)


**LIN-K30032**

Superior choice for pipeline work SAE 300 combines rugged design and traditional pure DC generator, also great for construction and maintenance applications.

WELDING  
EQUIPMENT

# VANTAGE® 300

+ Diesel Engine **22 HP**

+ Output **CC** **DC** **CV**

ITEM NUMBER	LIN-K24094	LIN-K24525 ONE-PAK®	LIN-K24535 READY-PAK®
Rated Output	300A/32V/100%, 350A/28V/100%		
Output Range	14-32V CV, 20-250A DC TIG, 30-400A DC, 40-300A Pipe, 90-300A Gouge		
Generator Output (AC)	3-PH: 12.5 kW peak, 11.0 kW cont. 1-PH: 11.5 kW peak, 10.0 kW cont.		
Engine	Kubota V1505 EPA Tier 4, 4 cylinder		
HP and speed	22 @ 1800 RPM		
Dimensions (H x W x D)	912 mm x 642 mm x 1524 mm (35.9" x 25.3" x 60")		
Net Weight	470 kg (1035 lb)		


**LIN-K24094**

Quiet and compact LINCOLN Vantage® 300 and 400 models are ideal for construction teams, pipe rig owners and rental fleet managers.



## Engine-Driven Welding Equipment

# VANTAGE® 400

+ Diesel Engine



+ Output



ITEM NUMBER	LIN-K24104	LIN-K25084 ONE-PAK®	K25094 READY-PAK®	LIN-K27112	K27174 ONE-PAK®	K27184 READY-PAK®
Rated Output	400A/36V/100% 450A/32V/100%					
Output Range	14-36V CV, 20-250A DC TIG, 30-500A DC, 40-300A Pipe, 90-450A Gouge					
Generator Output (AC)	3-PH: 19 kW peak, 17 kW cont., 1-PH: 12 kW peak, 11 kW cont.					
Engine	Perkins 404D-22 EPA Tier 4i, 4 cylinder			Kubota V2403M EPA Tier 4i, 4 cylinder		
HP and speed	32.7 @ 1800 RPM			35.5 @ 1800 rpm		
Dimensions (H x W x D)	912 mm x 642 mm x 1524 mm (35.9" x 25.3" x 60")					
Net Weight	559 kg (1230 lb)			565 kg (1245 lb)		



LIN-K24104

Quiet and compact LINCOLN Vantage® 300 and 400 models are ideal for construction teams, pipe rig owners and rental fleet managers.





# TOOLS & WELDING ACCESSORIES



**BLUESHIELD™** Welding Cable

2

**BLUESHIELD™** Cable Lugs

4

Electrode Cannisters and Stabilizing Ovens

6

**BLUESHIELD™** Ground Clamps

7

Clamps and Pliers

8

Saddle Machines and Pipe Stands

10

**BLUESHIELD™** Welding Hose

12

Air Carbon Arc Gouging

15

# BLUESHIELD WELDING CABLE

- + Excellent flexibility (stays flexible at -50°C)
- + Abrasion resistant
- + Oil, solvent and chemical resistant
- + Ozone and weather resistant
- + 600 V rated



## Construction

**Conductors:** Bare, annealed copper per ASTM B-172 Class K (AWG 30) stranding

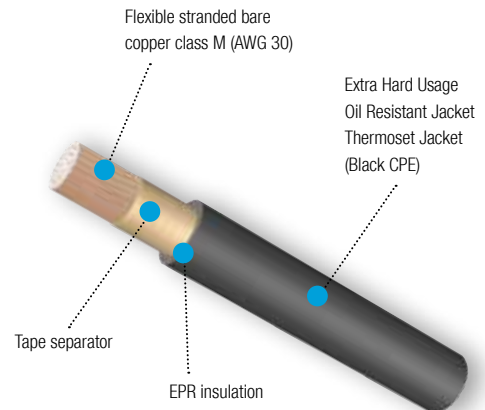
**Insulation:** EPR (Ethylene propylene rubber)

**Separator:** A tape separator is applied between the conductor and insulation to facilitate stripping

**Jacket:** CPE (Chlorinated poly-ethylene)

## RECOMMENDED WELDING CABLE SIZE

A	15 M (50')	30 M (100')	45 M (150')	60 M (200')	75 M (250')	100 M (300')
100	4	2	2	2	2	1
150	2	2	2	1	1/0	2/0
200	1	1	1	1/0	2/0	3/0
250	1/0	1/0	1/0	2/0	3/0	4/0
300	2/0	2/0	2/0	3/0	4/0	4/0
350	3/0	3/0	3/0	4/0	4/0	—
400	3/0	3/0	3/0	4/0	—	—
500	4/0	4/0	4/0	—	—	—



ITEM NUMBER	SIZE AWG	CONDUCTOR STRAND NO. / AWG	MAX. DIRECT CURRENT RESISTANCE AT 20°C Ω / KM	NORMAL THICKNESS OF INSULATION		APPROX. WEIGHT		APPROX. OUTSIDE DIAMETER	
				MM	IN	LB / 1000'	KG / KM	MM	IN
BLU-28284004	4 AWG	403 / 30	0.865	1.5	0.060	168	250	9.3	0.366
BLU-28284002	2 AWG	636 / 30	0.549	1.5	0.060	249	370	10.9	0.429
BLU-28284001	1 AWG	798 / 30	0.436	2.0	0.080	294	445	12.7	0.500
BLU-28284010	1/0 AWG	1016 / 30	0.345	2.0	0.080	387	576	14.1	0.555
BLU-28284020	2/0 AWG	1261 / 30	0.276	2.0	0.080	470	699	15.1	0.598
BLU-28284030	3/0 AWG	1590 / 30	0.219	2.0	0.080	588	875	16.9	0.679
BLU-28284040	4/0 AWG	2007 / 30	0.173	2.0	0.080	722	1075	18.1	0.716

Standard length cable packaging: 152 m (500 ft) reels. Other forms of packaging is available on request.



Power indicator in Female receptacle shows when power is on 15 A, 125 V



#### Cut-length welding cable

TEH-450	#4 x 15 m (50')	TEH-10100	#1/0 x 30 m (100')
TEH-4100	#4 x 30 m (100')	TEH-2050	#2/0 x 15 m (50')
TEH-250	#2 x 15 m (50')	TEH-20100	#2/0 x 30 m (100')
TEH-2100	#2 x 30 m (100')	TEH-3050	#3/0 x 15 m (50')
TEH-150	#1 x 15 m (50')	TEH-30100	#3/0 x 30 m (100')
TEH-1100	#1 x 30 m (100')	TEH-4050	#4/0 x 15 m (50')
TEH-1050	#1/0 x 15 m (50')	TEH-40100	#4/0 x 30 m (100')

#### Heavy duty extension cords

TEH-EC25BL	12/3 7.6 m (25') Blue jacket
TEH-EC25OR	12/3 7.6 m (25') Orange jacket
TEH-EC25YE	12/3 7.6 m (25') Yellow jacket
TEH-EC50BL	12/3 15 m (50') Blue jacket
TEH-EC50OR	12/3 15 m (50') Orange jacket
TEH-EC50YE	12/3 15 m (50') Yellow jacket
TEH-EC100BL	12/3 30 m (100') Blue jacket
TEH-EC100OR	12/3 30 m (100') Orange jacket
TEH-EC100YE	12/3 30 m (100') Yellow jacket

#### Power cable extensions

TEH-PCE25	8/3 type STW, 250 V 40 A, 7.6 m (25'), safety lighted ends
TEH-PCE50	8/3 type STW, 250 V 40 A, 15 m (50'), safety lighted ends

## BLUESHIELD CABLE CONNECTORS

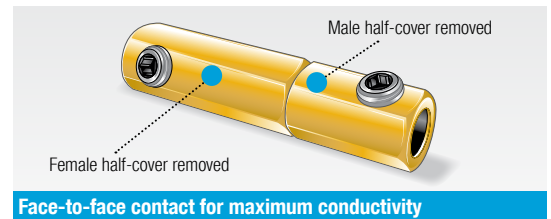
PROVEN AND RELIABLE, BLUESHIELD CABLE CONNECTORS ARE MADE FROM DURABLE ELASTOMER.

- + Interchangeable with popular brands
- + Slip-proof insulators
- + Flame retardant insulators
- + Very good corrosion resistance
- + Lightweight
- + Molded covers resist heat and cold
- + Brass body assembly slides easily

ITEM NUMBER	CABLE SIZE	DESCRIPTION	AMP CAPACITY
BLU-28800040	1/0 - 3/0	Connectors, Male / Female set	400
BLU-28800044	1/0 - 3/0	Connector, Male	400
BLU-28800042	1/0 - 3/0	Connector, Female	400
BLU-28800202	3/0 - 4/0	Connectors, Male / Female set, Heavy duty	500
BLU-28800200	4 - 1	Connectors, Male / Female set	300



BLU-28800040



Female half-cover removed

Male half-cover removed

Face-to-face contact for maximum conductivity

TOOLS & WELDING ACCESSORIES

## BLUESHIELD DUAL-LOCKING CABLE CONNECTORS

THE DOUBLE-LOCKING SYSTEM PREVENTS DISENGAGEMENT OF THE CONNECTORS, WHICH HELPS SAVE TIME AND INCREASES PRODUCTIVITY

- + Double-locking connector (brass lock and insulator lock)
- + Interchangeable with popular brands
- + Slip-proof insulators
- + Flame retardant insulators
- + Very good corrosion resistance
- + Lightweight
- + Durable neoprene material cannot chip or dent
- + Extreme resistance to physical abuse

ITEM NUMBER	CABLE SIZE	DESCRIPTION	AMP CAPACITY
BLU-28804000	1/0 - 3/0	Double-locking system, Male / Female set	400



Système à double blocage

**BLUESHIELD™ Cable Lugs**

**BLUESHIELD CABLE LUGS CAN BE SOLDERED,  
CRIMPED OR HAMMERED TO STRANDED  
WIRE AND CABLE**

## SOLDER-TYPE CABLE LUGS

Blueshield solder-type cable lugs are precision made from copper tubing. They have an extra long barrel for easy soldering or attaching using the swedge-on process\*. The stud holes are made especially for welding machines. Flared ends permit easy cable insertion into the lug.

- + Precision made from copper tubing
- + Extra long barrel for easy soldering or attaching by crimping
- + Made for best possible connection
- + Easy-to-use with flared end for easy cable insertion



*\*Swedge-on process*

*The swedge-on tool provides an easy and convenient way to install Blueshield cable lugs and cable splicers to welding cable. Insert bare cable strands into the lug barrel and impact with the swedge tool as shown in the illustration.*



### SOLDER LUGS

ITEM NUMBER	FOR CABLE SIZE	STUD HOLE	BARREL I.D.
BLU-28800011	2 and 1 Cable	13.50 mm (17/32")	0.402"
BLU-28800012	1/0 and 2/0 Cable	13.50 mm (17/32")	0.495"
BLU-28800013	3/0 and 4/0 Cable	13.50 mm (17/32")	0.620"

## HAMMER-ON TYPE CABLE LUGS

Blueshield hammer-on type cable lugs are also offered. Placed over the end of a welding cable and secured by hammering a notch.

- + Easy and convenient to use – no special tools required
- + Hammer blow makes a solid connection
- + Excellent pull-out strength without soldering or bolting



### HAMMER-ON LUGS

ITEM NUMBER	FOR CABLE SIZE	STUD HOLE	BARREL I.D.
BLU-28800015	4 to 1 Cable	12.7 mm (.500")	0.500"
BLU-28800016	1/0 and 2/0 Cable	14.0 mm (.550")	0.562"
BLU-28800017	3/0 and 4/0 Cable	15.9 mm (.625")	0.620"



# BLUESHIELD ELECTRODE HOLDERS

- + Offered in the 3 most popular styles (Bernard, Tweco and Lenco)
- + Non-flammable, heat resistant
- + Insulated compression springs
- + Current capacity from 200 to 400 A



## BERNARD STYLE

THE "SHORTSTUB" SCREW-TYPE ELECTRODE HOLDER ALLOWS BENDING OF THE ELECTRODE IN ANY DIRECTION.

ITEM NUMBER	AMP CAPACITY	ELECTRODE SIZE	LENGHT CM (IN)	CABLE SIZE
BLU-28800005	400	Up to 5.0 mm (3/16")	22.9 (9)	2/0

BLU-28800005

## TWECO STYLE

THE GROOVED JAW ALLOWS BENDING OF THE ELECTRODE AND QUICK RELEASE.

ITEM NUMBER	AMP CAPACITY	ELECTRODE SIZE	LENGHT CM (IN)	CABLE SIZE
BLU-28800006	200	Up to 4.0 mm (5/32")	21.3 (8.4)	1
BLU-28800007	250	Up to 5.0 mm (3/16")	22.9 (9)	1/0
BLU-28800008	300	Up to 6.0 mm (1/4")	25.4 (10)	1/0

BLU-28800007

## LENCO STYLE

THE LOW PROFILE DESIGN PROVIDES MAXIMUM COMFORT TO THE WELDER AND QUICK RELEASE OF THE ELECTRODE.

ITEM NUMBER	AMP CAPACITY	ELECTRODE SIZE	LENGHT CM (IN)	CABLE SIZE
BLU-28800001	200	Up to 4.0 mm (5/32")	21.3 (8.4)	1
BLU-28800002	250	Up to 5.0 mm (3/16")	21.3 (8.4)	2/0
BLU-28800003	300	Up to 6.0 mm (1/4")	25.4 (10)	2/0
BLU-28800004	350	Up to 6.0 mm (1/4")	26 (10.25)	2/0

BLU-28800004

TOOLS &  
WELDING  
ACCESSORIES



## Electrode Cannisters and Stabilizing Ovens

## PORTABLE ELECTRODE CANNISTERS

Rod Guard® cannisters provide storage and inventory control for all welding electrodes, rods and filler metals. The canisters are certified chloride-free and feature a threaded cap with long-lasting neoprene seal to keep electrodes airtight - preventing them from being contaminated with atmospheric moisture.

ITEM NUMBER	CAPACITY	ELECTRODE SIZE	THERMOSTAT	TEMPERATURE RANGE
<b>RDG-RG100</b>	4.5 kg (10 lb)	356 mm (14")	No	Up to 107° C (Up to 225° F)
<b>RDG-RG200</b>	4.5 kg (10 lb)	458 mm (18")	No	Up to 107° C (Up to 225° F)
<b>RDG-RG300</b>	4.5 kg (10 lb)	915 mm (36")	No	Up to 107° C (Up to 225° F)
<b>PHX-1205441</b>	4.5 kg (10 lb)	356 mm (14")	No	Up to 121° C (Up to 250° F)
<b>PHX-1205455</b>	6.8 kg (15 lb)	458 mm (18")	No	Up to 121° C (Up to 250° F)

Phoenix SAFETUBE® cannisters are diamond shaped to prevent rolling. Pressure fitted O-rings seal out moisture and contaminants. Cap is removed with a quarter turn.



## PORTABLE ELECTRODE OVENS

Gulco Portable electrode ovens are ideal for shop or field use. All are lightweight, rugged and easily carried to the welding site. They are insulated for accurate temperature control and efficient operation.



ITEM NUMBER	CAPACITY	ELECTRODE SIZE	THERMOSTAT	TEMPERATURE RANGE	HEATING ELEMENT	PILOT LIGHT	DIMENSIONS	WEIGHT
<b>GUL-10A20</b>	4.5 to 9 kg (10 to 20 lb)	Up to 460 mm (18")	No	Avg 135° C (Avg 275° F)	115 Volt AC/DC (100 W)	Yes	178 mm x 584 mm (7" x 23")	6.5 kg (14 lb)
<b>GUL-10B20</b>	4.5 to 9 kg (10 to 20 lb)	Up to 460 mm (18")	Yes	38 - 148° C (100 - 300° F)	115 Volt AC (125 W)	Yes	178 mm x 584 mm (7" x 23")	6.5 kg (14 lb)
<b>GUL-50</b>	22 to 32 kg (50 to 70 lb)	Up to 460 mm (18")	Yes	38 - 148° C (100 - 300° F)	115 Volt AC (300 W)	Yes	279 mm x 584 mm (11" x 23")	14.8 kg (32 lb)

## STATIONARY ELECTRODE OVENS

Gulco Stationary electrode ovens provide efficient dry storage for electrodes and wire reels.

- + Compact modular design with controls recessed for protection
- + Full insulation for operator safety and operating efficiency
- + Thermostat with on/off switch
- + Stackable
- + Lamp indicates oven operation
- + Removable shelves for large loads



ITEM NUMBER	CAPACITY	ELECTRODE SIZE	TEMPERATURE RANGE	HEATING ELEMENT	INSIDE DIMENSIONS H X W X D	OUTSIDE DIMENSIONS H X W X D	WEIGHT
<b>GUL-125</b>	57 to 81 kg (125 to 175 lb)	Up to 460 mm (Up to 18")	38 - 288° C (100 - 550° F)	115 Volt AC (1000 W)	209 mm x 247 mm x 482 mm (8 1/4" x 9 3/4" x 19 1/2")	406 mm x 406 mm x 622 mm (16" x 16" x 24 1/2")	27 kg (58 lb)
<b>GUL-350</b>	159 to 209 kg (350 to 450 lb)	Up to 460 mm (Up to 18")	38 - 288° C (100 - 550° F)	115 or 220 Volt AC (1500 W)	355 mm x 406 mm x 482 mm (14" x 16" x 19")	558 mm x 558 mm x 622 mm (22" x 22" x 24 1/2")	48 kg (105 lb)

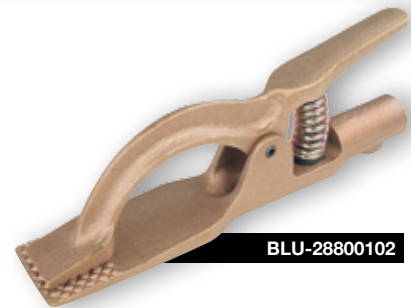
**BLUESHIELD™** Ground Clamps

# BLUESHIELD COPPER GROUND CLAMPS

- + Manufactured from heavy-duty copper
- + Forged conductors
- + Heavy-duty spring provides positive jaw contact
- + Includes Allen wrench

**COPPER**

ITEM NUMBER	AMP CAPACITY	JAW OPENING MM (IN)	LENGTH CM (IN)	CABLE SIZE
BLU-28800100	200	25.4 (1)	12.7 (5)	1
BLU-28800101	300	38.1 (1.5)	18.4 (7.25)	2/0
BLU-28800102	500	38.1 (1.5)	20.3 (8)	4/0
BLU-28800250	600	51.0 (2)	25.4 (10)	4/0

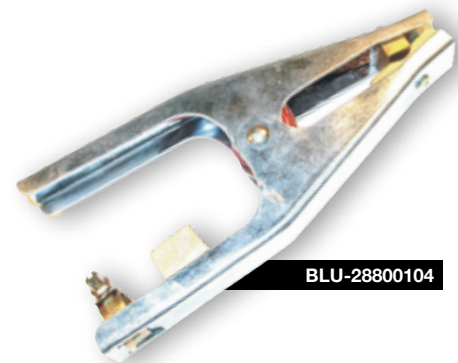


# BLUESHIELD STEEL GROUND CLAMP

- + Heavy duty, nickel-plated steel jaws
- + Forged brass conductors and braided copper strap provide superior current carrying capacity
- + High tension spring for positive clamping strength
- + Built-in cable connector with oval-point set screw makes cable installation easy

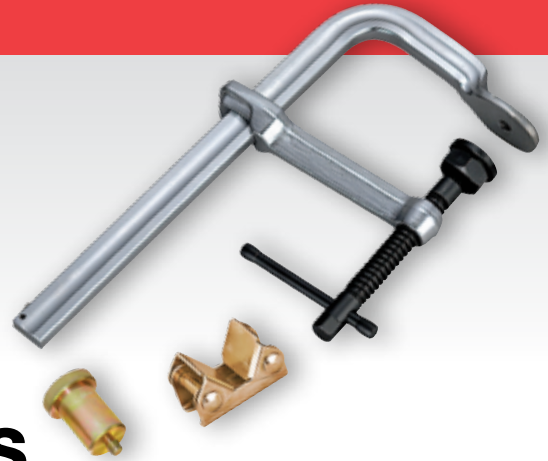
**STEEL**

ITEM NUMBER	AMP CAPACITY	JAW OPENING MM (IN)	LENGTH CM (IN)	CABLE SIZE
BLU-28800103	200	31.8 (1.25)	19.7 (7.75)	1
BLU-28800104	300	44.5 (1.75)	20.3 (8)	2/0
BLU-28800105	500	44.5 (1.75)	20.3 (8)	4/0



## Clamps and Pliers

CLAMPS ARE MULTI-FUNCTION TOOLS, SERVING MORE THAN JUST ONE APPLICATION. ALL CLAMPS ARE “QUICK-ACTING” AND MODULAR FOR THE FASTEST SET-UP.



## 4-IN-1 CLAMP PACKAGES



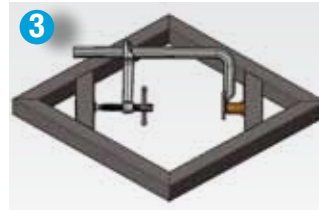
### STANDARD

The sliding arm clamp is 10 times faster than a C-Clamp



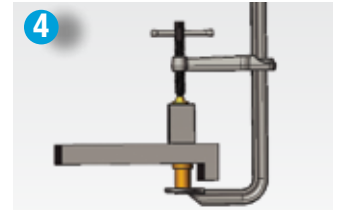
### PIPE

Add the exclusive V-Pad to create a Pipe Clamp



### SPREADER

Slide the clamp arm OFF and reverse to create a spreader clamp



### STEP-OVER

Add the extender block to create a step-over clamp

ITEM NUMBER	OPENING		THROAT		CLAMP PRESSURE		RAIL SIZE	
	MM	IN	MM	IN	KG	LB	MM	IN
STN-UF65C3	165 mm	6-1/2"	121 mm	4-3/4"	454 kg	1000 lb	10-400 mm	3/8-16"
STN-UG85C3	216 mm	8-1/2"	121 mm	4-3/4"	544 kg	1200 lb	10-400 mm	3/8-16"
STN-UM105PC3	266 mm	10-1/2"	140 mm	5-1/2"	1088 kg	2400 lb	10-400 mm	3/8-16"
STN-UM125C3	318 mm	12-1/2"	140 mm	5-1/2"	1088 kg	2400 lb	10-400 mm	3/8-16"
STN-UM165C3	419 mm	16-1/2"	140 mm	5-1/2"	1088 kg	2400 lb	10-400 mm	3/8-16"
STN-UM205C3	521 mm	20-1/2"	140 mm	5-1/2"	1088 kg	2400 lb	10-400 mm	3/8-16"

TOOLS &  
WELDING  
ACCESSORIES

## BLUESHIELD MIG PLIERS

- + Designed for hammering, wire cutting, insulation bushing removal and installation, and drawing out wire
- + Suited for the removal of spatter from inside and outside the nozzle

- + Perfect for the removal and installation of contact tips and nozzles
- + Spring loaded for easy opening and closing

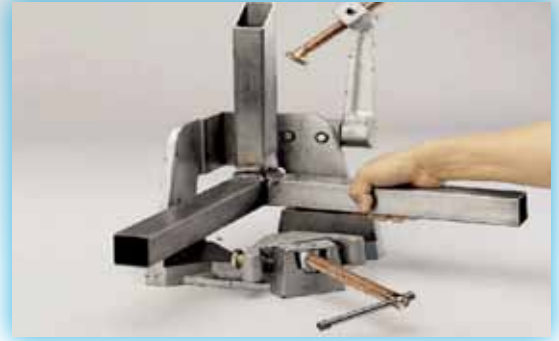
ITEM NUMBER	DESCRIPTION
BLU-YS50	Mig Pliers



## Clamps and Pliers

# WELDERS ANGLE CLAMPS - 2 AND 3 AXIS

- + The 3-axis welder angle clamp features a quick-acting, "swing-away" arm
- + Holds workpiece in position before welding
- + Holds parts in position during cool down to minimize distortion due to contraction

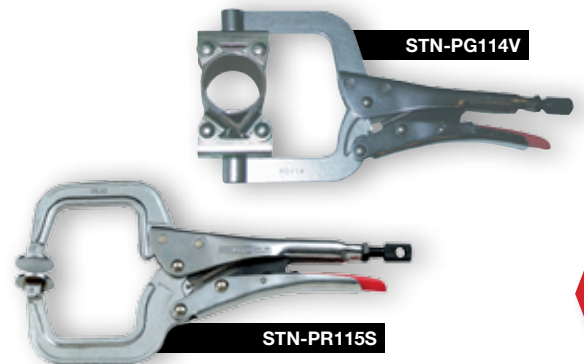


ITEM NUMBER	CHARACTERISTICS	MITER JOINTS (C) (EACH SIDE)	JAW LENGTH (D)	T CLEARANCE (E)	JAW HEIGHT (F)	WEIGHT
STN-WAC35SW	3-axis fixture, quick acting screw, swing-away arm, t-handle, stand-offs	95 mm (3.75")	121.92 mm (4.80")	62.23 mm (2.45")	35 mm (1.38 po)	11 kg (24 lb)
STN-WAC35D	2-axis fixture, quick acting screw, two stand-offs, machined on two outside faces	95 mm (3.75")	121.92 mm (4.80")	62.23 mm (2.45")	35 mm (1.38 po)	5 kg (11 lb)

# PIPE PLIERS/LOCKING C-CLAMPS

ITEM NUMBER	DESCRIPTION	OPENING
STN-PG114V	280 mm (11") pipe pliers with 2 large V-pads	38-64 mm (1-1/2"-2-1/2")
STN-PR115	280 mm (11") locking C-clamp (round tip)	100 mm (4")
STN-PR115S	280 mm (11") locking C-clamp (swivel pad)	100 mm (4")

\* Spacers can be added to reduce the minimum diameter to hold smaller pipes.

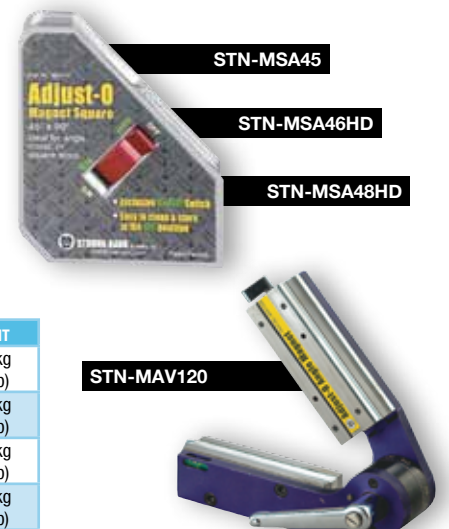


TOOLS &  
WELDING  
ACCESSORIES

# ADJUST-O™ MAGNET SQUARE

- + Fast and easy way to hold workpieces at 45° and 90°
- + Easy and safe set-up
- + Turn the magnet OFF while setting up, turn ON when ready to work
- + Ideal for round and square tubing, angle and flat stock

ITEM NUMBER	DESCRIPTION	DIMENSIONS	MAG. FORCE	WEIGHT
STN-MSA45	45°- 90°	111 mm x 95 mm x 25 mm (4-3/8" x 3-3/4" x 1")	29.5 kg (65 lb)	0.45 kg (1.0 lb)
STN-MSA46HD	45°- 90°	111 mm x 95 mm x 29 mm (4-3/8" x 3-3/4" x 1-1/8")	40.8 kg (90 lb)	0.60 kg (1.5 lb)
STN-MSA48HD	45°- 90°	152 mm x 130 mm x 37 mm (6" x 5-1/8" x 1-7/16")	72.5 kg (160 lb)	1.40 kg (3.0 lb)
STN-MAV120	30°- 275°	197 mm x 197 mm x 95 mm (7-3/4" x 7-3/4" x 3-3/4")	50 kg (110 lb)	2.40 kg (5.3 lb)



## Saddle Machines and Pipe Stands

# SADDLE MACHINES

Dependable and tough, these saddle machines are designed specifically for critical pipe applications that require a high degree of cut quality and accuracy. Cutting torch not included.

ITEM NUMBER	DESCRIPTION
MAH-030100000	Oxy-acetylene, Manual pipe cutting and bevelling machine, 38 mm-102 mm (1 1/2"-4")
MAH-030101000	Oxy-acetylene, Manual pipe cutting and bevelling machine, 76 mm-203 mm (3"-8")



MAH-030100000



MAH-030101000

# PIPE STANDS

Full range of heavy-duty adjustable pipe stands available in varying configurations: suitable for use with threading machines, roll grooves, etc.

ITEM NUMBER	DESCRIPTION
JVL-LPS	L series Pipe Stand
JVL-MPS	M series Pipe Stand
JVL-SPS	S-series Pipe Stand
JVL-PFS	Portable Fabrication Station*
JVL-MGH	Pipeliners Magnetic Grinder Holder
JVL-PCS6	Portable Chuck Spinner*



JVL-SPS



JVL-LPS



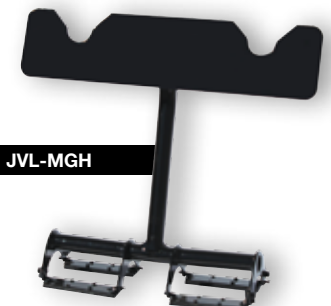
JVL-MPS



JVL-PFS



JVL-PCS6



JVL-MGH

\* Shown mounted on a pipe stand (available separately).



## Contour Marker

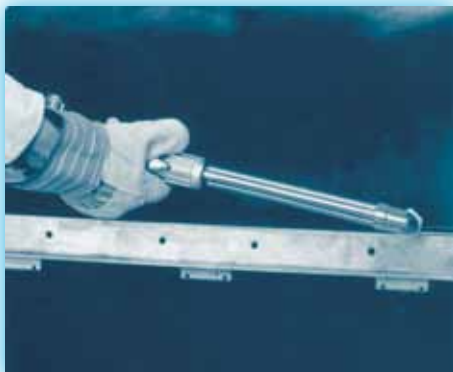
# CONTOUR MARKER

The Contour Marker is a compact, time-saving tool used to lay out pipe and structural steel joints. Laterals at any angle, tees, wyees, crosses, elbows - any type or size of joint can be quickly and precisely laid out.

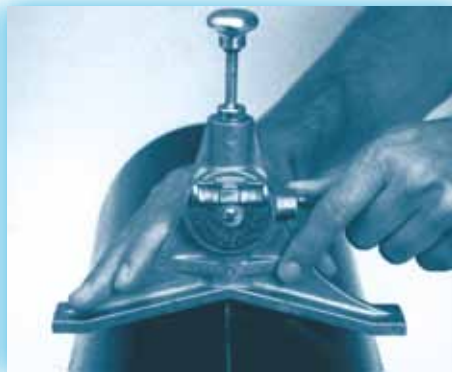


JAC-14753

ITEM NUMBER	DESCRIPTION
JAC-14791	Burning guide #28, Magnetic
JAC-14775	Standard centering head
JAC-14782	Standard radius marker, up to 24", Stock #1224
JAC-14790	Flat soapstone holder
JAC-14753	Large, 3"-10" pipe, wrap-a-round, 98.6 mm x 1.8 m (3.88" x 6')
JAC-14756	Extra-large, 6"-16" pipe, wrap-a-round, 127 mm x 2.7 m (5" x 9')
JAC-14771	Marker for pipe or steel members up to 457 mm (18")
JAC-14795	Flange base aligner



JAC-14791



JAC-14775



JAC-14782

**BLUESHIELD™** Welding Hose

**BLUESHIELD WELDING HOSE IS SPECIFICALLY DESIGNED TO MEET CUSTOMER AND INDUSTRY REQUIREMENTS.**

## GRADE T HOSE

FOR ALL POPULAR FUEL GASES, INCLUDING ACETYLENE. TUBE AND COVER ARE OIL AND FLAME RESISTANT.

Grade T is the best choice for industrial applications where hose is exposed to sparks, oil, grease and abrasion. Preferred by shops that use more than one fuel gas. Grade T hose is recommended for all heating applications. This hose is used with oxygen and all popular fuel gases, including acetylene. Both the inner tube and the outer cover are made of oil-resistant and flame-retardant rubber compounds.



### BLUESHIELD GRADE T WELDING HOSE

#### TUBE

Black neoprene

#### COVER

Green neoprene (oxygen)  
Red (fuel gas) neoprene

#### REINFORCEMENT

Multiple textile spirals

#### TEMP. RANGE

-40° F to +200° F

#### BRAND DESCRIPTION

Ink Brand - White letter colour

#### NOTE

The compressed gas association (CGA) prescribes the exclusive use of Grade T hose in all oxy-fuel gas applications (see CGA SB-11 and E1).

ITEM NUMBER	GRADE	DIAMETER		FITTINGS	LENGTH	
		MM	IN		M	FT
Twin-line hose assemblies (oxy-fuel gas)						
BLU-04513402	T	6.4	1/4	B - B	7.6	25
BLU-04513404	T	6.4	1/4	B - B	15.2	50
BLU-04513408	T	6.4	1/4	B - B	30.5	100
BLU-04513602	T	9.5	3/8	B - B	7.6	25
BLU-04513604	T	9.5	3/8	B - B	15.2	50
BLU-04513608	T	9.5	3/8	B - B	30.5	100
Twin-line bulk hose (oxy-fuel gas)*						
BLU-04211040	T	6.4	1/4	—	—	—
BLU-04211050	T	9.5	3/8	—	—	—
Single line green bulk hose (oxygen)*						
BLU-04130125	T	6.4	1/4	—	—	—
BLU-04130127	T	9.5	3/8	—	—	—
Single line red bulk hose (fuel gas)*						
BLU-04130126	T	6.4	1/4	—	—	—
BLU-04130128	T	9.5	3/8	—	—	—

\*Bulk hose is supplied on 600" (182.9 m) reels.

**BLUESHIELD™** Welding Hose**TUBE AND COVER ARE NOT FLAME OR OIL RESISTANT.**

Light Duty hose for applications using acetylene only. The inner tube and outer cover are made of rubber compound that is neither resistant to oil nor to flame.

ITEM NUMBER	GRADE	DIAMETER		FITTINGS	LENGTH	
		MM	IN		M	FT
TWIN-LINE HOSE ASSEMBLIES (OXY-ACETYLENE)						
BLU-04513101	R	4.8	3/16	B - B	3.8	12.5
BLU-04513102	R	4.8	3/16	B - B	7.6	25
BLU-04513201	R	6.4	1/4	B - B	3.8	12.5
BLU-04513202	R	6.4	1/4	B - B	7.6	25
SINGLE-LINE RED HOSE ASSEMBLY (ACETYLENE)*						
BLU-04512000	R	4.8	3/16	A - A	3.8	12.5
TWIN-LINE BULK HOSE (OXY-ACETYLENE)						
BLU-04211025	R	4.8	3/16	—	—	—

**BLUESHIELD  
GRADE R  
WELDING HOSE**

**TUBE**  
Black EPDM

**COVER**  
Green EPDM (oxygen),  
Red (acetylene) EPDM

**REINFORCEMENT**  
Multiple textile spirals

**TEMP. RANGE**  
-20° F to +200° F

**BRAND DESCRIPTION**  
Ink Brand - white letter colour

**MIG & TIG SHIELDING GAS HOSE**

ITEM NUMBER	DESCRIPTION
TEH-PWAH10	10' (3 m) x 1/4" (6.4 mm)
TEH-PWAH25	25' (7.6 m) x 1/4" (6.4 mm)
TEH-PWAH50	50' (15 m) x 1/4" (6.4 mm)
TEH-PWAH100	100' (30 m) x 1/4" (6.4 mm)

**OXY / FUEL GAS HOSE REELS****SHR-SR4201****SHR-SR4201 AND SHR-SR4202**

Designed for 100' of double hose, 75' of 1/4" and 25' of 3/16" whip. The base of the reel bolts to the location i.e. deck, cabinet walls, workshop wall or floor. Continuous pressure is applied through swivels. The spool is chain driven. The SR 4201 includes all fittings, clamps, swivels and tiebolts.

**Dimensions:** 13" (33 cm) High x 16" (40.6 cm) Wide x 12" (30.5 cm) Deep

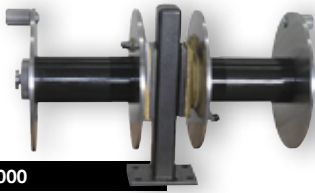
**TEH-RHR50****TEH-RHR50 RETRACTABLE HOSE REEL**

Properly store your hose when they are not in use with this retractable hose reel. Save time with its automatic function. Hose reel comes complete with 50' (15 m) grade T 1/4" twin hose.

ITEM NUMBER	DESCRIPTION
SHR-SR4201	Twin oxy/fuel gas hose reel, c/w swivels
SHR-SR4202	Single hose reel
TEH-RHR50	Retractable twin hose reel, oxy-fuel gas

## Welding Reels

WELDING REELS ARE USED TO RETRACT AND STORE WELDING CABLES AND WELDING HOSES SAFELY AND SECURELY. THESE REELS ARE FABRICATED PRIMARILY FROM POLISHED AND CLEAR-COAT ED ALUMINUM FOR A PERMANENT NON-TARNISH FINISH. METAL PARTS ON THE REELS ARE EITHER NICKEL-PLATED OR HAVE A POWDER-COAT ED FINISH.



SHR-SR4000

## HORIZONTAL REEL

SHR-SR4000

Leads from the welding machine are connected to swivel contacts on the central post. The spools and post are completely isolated and will not ground to work or deck. The reel is rated at 500 amps. The reel can be mounted in any position by bolting the base plate of the central post to the desired location. Manual locking nut on shaft to be tightened before welding commences. The reel will hold 150' of light cable or 120' of heavy cable.

**Dimensions:** (horizontal reel) 16" (40.6 cm) High x 28" (71.1 cm) Wide x 12" (30.5 cm) Deep



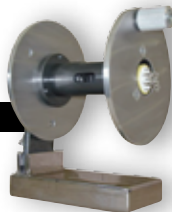
SHR-SR4100

## VERTICAL REEL

SHR-SR4100

Leads from the welding machine are connected to swivel contacts on the central post. The spools and post are completely isolated and will not ground to work or deck. The reel is rated at 500 amps. It can be mounted in any position by bolting the base plate of the central post to the desired location. Manual locking nut on shaft to be tightened before welding commences. The reel will hold 150' of light cable or 120' of heavy cable.

**Dimensions:** (vertical reel) 30.5" (77.5 cm) High x 17" (43.2 cm) wide x 12" (30.5 cm) Deep



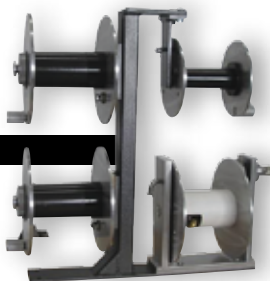
SHR-SR4300

## REMOTE REEL

SHR-SR4300

Designed to hold 100' of 5-wire cable. To mount this reel, the base plate is bolted to the location. A 9 pin male and female Locking Plug is supplied and is fitted and clamped into the centre of the reel. The reel must be unplugged to roll up or unroll the cable.

**Dimensions:** 16" (40.6 cm) High x 17" (43.2 cm) Wide x 12" (30.5 cm) Deep



SHR-SR4700

## CLUSTER REEL

SHR-SR4700

Built up of Vertical weld reel, Oxygen / Fuel Gas reel and Remote reel.

**Dimensions:** 32" (81.3 cm) High x 36" (91.4 cm) Wide x 12" (30.5 cm) Deep

ITEM NUMBER	DESCRIPTION
SHR-SR4000	Horizontal cable reel
SHR-SR4100	Vertical cable reel
SHR-SR4300	Remote Reel
SHR-SR4700	Cluster Reel

## Air Carbon Arc Gouging

# BLUESHIELD GOUGING CARBON ELECTRODES

Blueshield gouging carbon electrodes are designed especially for the air carbon-arc metal removal process.

## BLUESHIELD GOUGING ELECTRODES OFFER:

- + Long electrode life
- + Excellent arc stability
- + Superior metal removal rates
- + Groove uniformity
- + Numerous sizes



Use Blueshield carbon gouging electrodes with any type of gouging torches connected to a DC power supply and compressed air source. Blueshield carbon gouging electrodes contain a precisely formulated blend of carbon and graphite that produces very efficient metal removal performance

### Applications

- + Edge preparation for groove joints (especially J- and U-grooves)
- + Remove discontinuities from weld deposits
- + Remove entire welds when structural repairs or modifications are necessary

### DC COPPERCLAD POINTED ELECTRODES

A standard all-purpose gouging electrode. Controlled copper coating improves conductivity providing more efficient, cooler, operation and helps maintain electrode diameter at the point of the arc. When using pointed gouging carbons, the user will have about three inches of stub loss.

ITEM NUMBER	DESCRIPTION	QUANTITY	ELECTRODE SIZE	MIN. AMP	MAX. AMP	K4000 MODEL	K2000 MODEL
BLU-28977512	DC Copperclad pointed electrode	50 / pkg	4.8 mm (3/16") x 305 mm (12")	200	250	X	X
BLU-28977516	DC Copperclad pointed electrode	50 / pkg	6.4 mm (1/4") x 305 mm (12")	300	400	X	X
BLU-28977520	DC Copperclad pointed electrode	50 / pkg	7.9 mm (5/16") x 305 mm (12")	350	450	X	
BLU-28977524	DC Copperclad pointed electrode	50 / pkg	9.5 mm (3/8") x 305 mm (12")	450	600	X	

# ARC GOUGING TORCHES

## ARCAIR EXTREME K4000

Rated at 1,000 Amps, it uses compressed air at 550 kPa (80 psig) and 700 L/min (25 cfm). Supplied with a 2.14 m (7') long cable assembly.

ARC-61082008

## RK4000

TEH-RK4000

### HELPFUL HINTS

When calculating electrode consumption, the following information may be helpful:

- + For every inch of electrode consumed, the user will get 8" of groove when making a gouge that is equal in depth to the diameter of the carbon. The gouged width will be about 1/8" wider than the diameter of the carbon electrode being used.

### SAFETY REMINDERS

- + Use a welding helmet (shade 11 and up).
- + Use additional skin protection products such as Blueshield gloves & garments.
- + Wear ear protection against noise and to protect ears from sparks.
- + Avoid inhaling breathing smoke and fumes.
- + Remove all combustibles and flammables from work area.
- + Never substitute oxygen for compressed air.



## TIP CLEANER SET

- + Quality aluminum case
- + Exclusive LOCK-IN-KNOT system

WYP-STANDARDSET



## WRENCHES

ITEM NUMBER	DESCRIPTION
BLU-01450119	Blueshield 9-way wrench
ATL-5	For B and MC acetylene tanks, double-ended

BLU-01450119



ATL-5

## SOAPSTONE HOLDERS AND REPLACEMENT SOAPSTONE

- + Natural grade, marking quality. All white texture

ITEM NUMBER	DESCRIPTION
WYP-FLATHOLDER	WYPO® flat holder
WYP-ROUNDHOLDER	WYPO® round holder
GEN-SOAPSTONEFLAT	Replacement flat soapstone, dozen
GEN-SOAPSTONERND	Replacement round soapstone, dozen

WYP-ROUNDHOLDER



WYP-FLATHOLDER

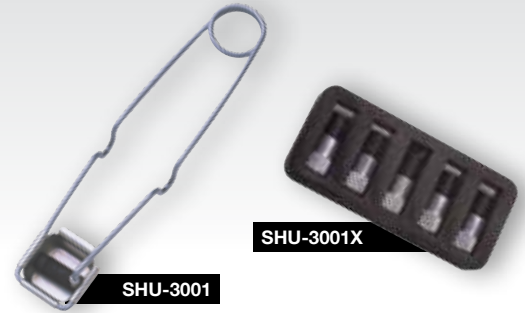
## HOSE REPAIR KIT

ITEM NUMBER	DESCRIPTION
OET-WK82	B-size kit for 4.8 mm (3/16" ) and 6.4 mm (1/4") 1 D hose

# SHURLITE SPARK LIGHTERS

- + Lightweight and easy-to-use round file lighter is built to last
- + Provides continuous sharp surface

ITEM NUMBER	DESCRIPTION	PACKAGING QTY/BOX
SHU-3001	Single-flint lighter, round file	10/box
SHU-3001X	Single-flint renewal, 5/holder	40 holder/box



ITEM NUMBER	DESCRIPTION	PACKAGING QTY/BOX
SHU-4501	Three-flint lighter	10/box
SHU-5012X	Three-flint renewal	4/card



## EAR CLAMPS

Permanent, tight connection will only be released if required. For all clamping and pressure ranges, hard or soft materials, hoses, cables or ropes. Made from tube or band, stepless, self-tensioning or reusable. Simple and straightforward to use.

ITEM NUMBER	DESCRIPTION	DIMENSIONS	
		MM	IN
OET-10100016	2 Ear clamp	12 mm	1/2"
OET-10100019	2 Ear clamp	14 mm	9/16"
OET-10100024	2 Ear clamp	16 mm	5/8"



TOOLS &  
WELDING  
ACCESSORIES

## FITTINGS

Air Liquide offers a comprehensive selection of compressed gas fittings used in many welding applications. Adaptors, bushings, couplers, connectors, ferrules, nuts, etc. are available to help connect your systems together.



# CHIPPING HAMMERS

- + Black oxide finish on heads and shafts; unlike paint, it will not chip, peel, flake or contaminate the weld
- + Long neck heads on wood handles avoid splintering when working over edges
- + Wide chisel blades and slim taper cones provide long service life
- + Handles are shaped for directional, no-slip feel

ITEM NUMBER	DESCRIPTION
ATL-WH20	Long neck Tomahawk, cone and chisel
ATL-WH30	Long neck Tomahawk, cone and cross chisel
ATL-H	Standard steel-grip Tomahawk, cone and chisel
ATL-J	Standard wood-grip Tomahawk, cone and chisel
ATL-S20	Econo steel-grip Tomahawk, cone and chisel
ATL-HCP	Standard steel-grip Tomahawk, cone and cross chisel
ATL-JCP	Standard wood-grip Tomahawk, cone and cross chisel



# BLUESHIELD SCRATCH BRUSHES

Blueshield scratch brushes are ideal to prepare surfaces for painting, oxide removal and cosmetic finishing without having to use chemicals; coated or bonded abrasives. Made in Canada.

Applications

## + Slag removal and cleaning

- + Cleaning edge preparation for groove joints
- + Adapted for pipeline and industrial machine applications
- + Excellent for concrete structures

## WHICH WIRE TYPE SHOULD YOU USE?



## HIGH CARBON

### High carbon

Hard drawn wire is used in applications involving medium stresses or static conditions. Oil-tempered wire is a general purpose wire with spring properties obtained by heat treatment.

### Stainless steel

Used for stainless steel applications. Stainless steel brushes are highly corrosion resistant, and should be used where contamination or after-rust is a problem. Good with chemicals and solvents. Excellent bend recovery.

### Brass

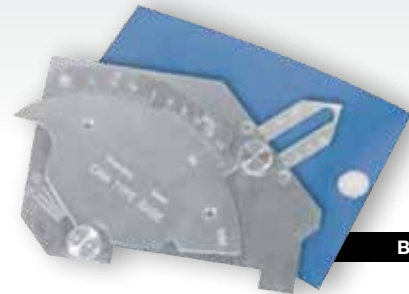
A non-corrosive, flexible filament, which provides high degree of abrasion, but is softer; much softer carbon or stainless steel; perfect for cleaning surfaces without damaging them.

ITEM NUMBER	DESCRIPTION	ROWS	BLOCK WIDTH	WIRE SIZE	TRIM LENGTH
BLU-1777	Brush, Wire scratch, Curved handle	3x19	15/16	0.014	1-1/8
BLU-1777SS	Brush, Wire scratch, Curved handle, Stainless steel	3x19	15/16	0.014	1-1/8
BLU-1781	Brush, Wire scratch, Shoe Handle	4x16	1-1/16	0.014	1-1/8
BLU-1781SS	Brush, Wire scratch, Shoe handle, Stainless steel	4x16	1-1/16	0.014	1-1/8
BLU-SB2088SS	Brush, Cleaning, Wire, Stainless steel, Wood handle, Small	3x7	7-3/4	0.006	1/2
BLU-SB2088PSS	Brush, Cleaning, Wire, Stainless steel, Plastic handle, Small	3x7	7-3/4	0.006	1/2

# FILLET WELD GAUGES

The fillet weld gauge is used for checking alignment, confirming dimensions before welding and verifying weld dimensions. The picture shows the use of a fillet weld gauge.

ITEM NUMBER	DESCRIPTION
BLU-01451120	Blueshield fillet weld gauge set
BLU-01451122	Blueshield cam type weld gauge



BLU-01451122



BLU-01451120



1. CHECKING FILLET LEG SIZE

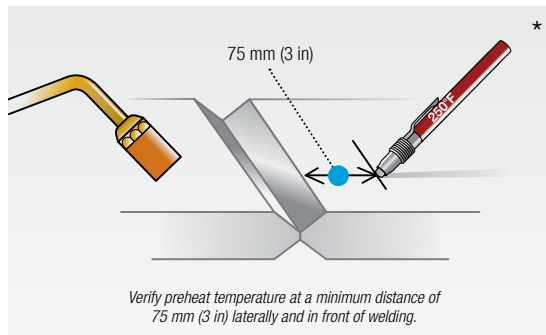
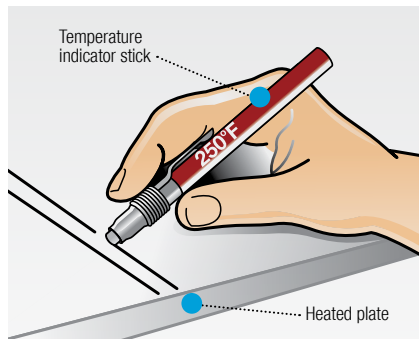


2. CHECKING FILLET WELD THROAT SIZE

# TEMPERATURE INDICATOR STICKS

Simple, easy-to-use temperature indicators. Ideal for a wide range of applications, from surface temperature measurement during metal working procedures (such as heat treating and welding) to the measurement of operating temperatures of bearings or motors. Simply mark the surface and the colour will appear at the point of contact once the surface reaches the product's rated temperature.

ITEM NUMBER	TEMPERATURE
TEM-TS0100	38°C (100°F)
TEM-TS0125	52°C (125°F)
TEM-TS0150	66°C (150°F)
TEM-TS0175	79°C (175°F)
TEM-TS0200	93°C (200°F)
TEM-TS0225	107°C (225°F)
TEM-TS0250	121°C (250°F)
TEM-TS0450	232°C (450°F)
TEM-TS0475	246°C (475°F)
TEM-TS0488	253°C (488°F)
TEM-TS0500	260°C (500°F)
TEM-TS0550	288°C (550°F)
TEM-TS0600	316°C (600°F)
TEM-TS0650	343°C (650°F)
TEM-TS0700	371°C (700°F)
TEM-TS0750	399°C (750°F)
TEM-TS0800	427°C (800°F)



Other temperature indicators available with various temperature ratings.

\* Source: Canadian Welding Bureau, Training Modules.



# INFRARED NON-CONTACT THERMOMETER

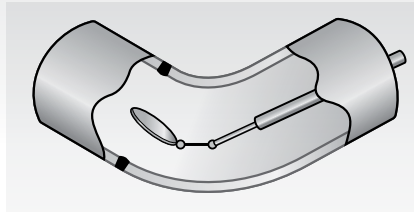
This infrared thermometer can display in °C or °F. The reading time is less than 1 second. It comes with a laser pointer for accuracy.

ITEM NUMBER	DESCRIPTION
TEH-DT8812	Non-contact infrared thermometer, -50 to 500 degree Celcius.



# INSPECTION MIRRORS

Original All-Angle Joint Mirrors with brushed finish stainless steel mirror backs. Fast, accurate visual inspection of hidden areas with an almost limitless number of positions. Double ball joint links swivel mirrors for 360° viewing.



ULL-A2



ULL-K2

ITEM NUMBER	DESCRIPTION
ULL-A2	Circular Mirror 7/8" mirror diam. Overall length 7 1/2".
ULL-E2	Circular Mirror 1 1/4" mirror diam. Overall length 8".
ULL-K2	2 1/8" x 3 1/2" mirror. Overall length 11 1/4", extends to 15 1/4". Rectangular Telescoping Mirror, extra long handle.

# PAINT MARKERS

## SOLID PAINT MARKERS

Solid Metal Markers provide permanent marking under almost any conditions. The marks will remain bright, clear and legible even on material that is stored outside for long periods of time or material that receives heavy abuse.

ITEM NUMBER	DESCRIPTION
NIS-SPYES	Standard, Yellow
NIS-SPWHS	Standard, White
NIS-SPRES	Standard, Red

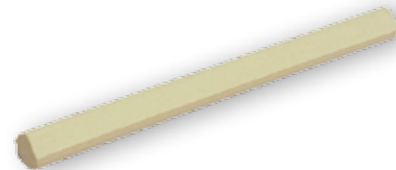


TOOLS &  
WELDING  
ACCESSORIES

## HIGH TEMPERATURE METAL MARKER

High Temperature Metal Markers provide legible markings at temperatures as high as 871°C (1600°F). Marks on any surface; rough, smooth, wet, oily or dry.

ITEM NUMBER	COLOR
MAR-81220	White



## VALVE ACTION PAINT MARKERS

The Valve Action Paint Marker fibre tip requires very little pressure to release specially formulated spirit-based opaque paint from the metal barrel. The marks are lead free, very fast drying, fade and ultraviolet resistant, similar to an ink marker but with the opacity of paint.

ITEM NUMBER	DESCRIPTION
MAR-96821	Medium tip, Yellow
MAR-96820	Medium tip, White



MAR-96821

# PAINT MARKERS

Ball Paint Markers are commonly used in factories where tools, rolls, dies, bins and metal parts are marked for identification. The tough plastic bottle has a metal writing tip with a steel ball to regulate the flow of liquid paint. Comfortable and easy to use, provides bright-coloured, quick-drying lines or marks that are long lasting and weather resistant.



MAR-84620

ITEM NUMBER	DESCRIPTION
MAR-84621	Metal tip, Yellow
MAR-84620	Metal tip, White

## PAINTSTICK MARKERS

Paintstick markers are solidified paint markers in stick form, combining the long-lasting durability of paint with the ease of application of a crayon. Marks any material, surface or texture: rough, smooth, wet, dry, icy, rusty or even oily. These markers dry like paint with excellent abrasion and are fade and weather resistant.



MAR-80220

ITEM NUMBER	COLOR
MAR-80220	White
MAR-80725	Bleed-through, blue

Permanent print markers are designed not to erase. Use a permanent marker on any surface where you need the print to last.

ITEM NUMBER	COLOR
ART-EK400W	White
ART-EK400Y	Yellow
ART-EK400BLUE	Blue
ART-EK400BLACK	Black
ART-EK400R	Red
ART-EK400GR	Green



ART-EK400W

## GTAW - Gas-Tungsten Arc Welding

# BLUESHIELD TUNGSTEN ELECTRODES

Choosing the right tungsten electrodes and filler metal rods are crucial first steps in successful gas tungsten arc welding (GTAW).

## BLUESHIELD TUNGSTEN ELECTRODES FOR PRECISION TIG WELDING

- + Are available in five tungsten types
- + Come in a variety of industry standard diameters
- + Offer the highest quality standard in the industry (composed of either pure tungsten or an alloy of tungsten and other elements and oxides)
- + Are color-coded to eliminate confusion over type
- + Blueshield tungsten electrodes are ground finished to provide maximum smoothness and consistency Length of all tungsten electrodes is 178 mm (7") packages of 10 electrodes per box



NAME	AWS CLASS	COLOUR CODE	APPLICATION	DIAMETER		ITEM NUMBER
				MM	IN	
Pure	EWP	Green	Good arc stability in AC. Lowest current capacity and least expensive. Maintains a clean balled end for welding on AC. More prone to weld contamination than other types of tungsten electrodes.	1.0	0.040	BLU-25751302
				1.6	1/16	BLU-25751304
				2.4	3/32	BLU-25751306
				3.2	1/8	BLU-25751308
				4.0	5/32	BLU-25751310
2% Thoriated	EWTh-2	Red	Good current capacity, arc stability and easy arc start on DC current. High-resistance to weld pool contamination. Maintains sharpened tip configuration. Not normally used on AC current because it is difficult to maintain the balled end.	1.0	0.040	BLU-25755302
				1.6	1/16	BLU-25755304
				2.4	3/32	BLU-25755306
				3.2	1/8	BLU-25755308
				4.0	5/32	BLU-25755310
Zirconium	EWZr-1	Brown	Excellent for AC welding due to the higher arc stability. High-resistance to weld pool contamination. Excellent balled-end retention.	1.0	0.040	BLU-25757302
				1.6	1/16	BLU-25757304
				2.4	3/32	BLU-25757306
				3.2	1/8	BLU-25757308
				4.0	5/32	BLU-25757310
1.5% Lanthanum	EWLa-1.5	Gold	Can be a non-radioactive replacement for thoriated tungsten. Excellent arc starting, stability, long life and higher-current capacity. Operate at slightly different voltage than thoriated or ceriated tungsten.	1.0	0.040	BLU-25751502
				1.6	1/16	BLU-25751504
				2.4	3/32	BLU-25751506
				3.2	1/8	BLU-25751508
				4.0	5/32	BLU-25751510
2% Ceriated	EWCe-2	Orange	Excellent arc starting, stability, long life and higher-current capacity than thoriated tungsten. Operate successfully with AC or DC current. Non-radioactive.	1.0	0.040	BLU-25751702
				1.6	1/16	BLU-25751704
				2.4	3/32	BLU-25751706
				3.2	1/8	BLU-25751708
				4.0	5/32	BLU-25751710
E3	EWG	Purple	Suitable for AC or DC use. Long life, excellent arc. Stability. Non-radioactive. Suitable replacement for 2% thoriated.	1.0	0.040	BLU-25756302, 10/Pkg
				1.6	1/16	BLU-25756304, 10/Pkg
						BLU-257563043, 3/Pkg
				2.4	3/32	BLU-25756306, 10/Pkg
						BLU-257563063, 3/Pkg
				3.2	1/8	BLU-25756308, 10/Pkg
						BLU-257563083, 3/Pkg
				4.0	5/32	BLU-25756310, 10/Pkg

### SAFETY NOTE

Thorium is a radioactive oxide. When welding is to be performed in confined spaces for prolonged periods or if electrode grinding dust might be ingested, special ventilation precautions should be considered.

The user should consult appropriate safety personnel and take the appropriate steps to avoid contact with thorium.

## GTAW - Gas-Tungsten Arc Welding

# SUGGESTED TUNGSTEN PREPARATION

## 1. PREPARING TUNGSTEN FOR DC ELECTRODE NEGATIVE (DCEN) WELDING OR AC WELDING WITH INVERTER MACHINES

### 1 GRINDING WHEEL

Grind end of tungsten on fine grit, hard abrasive wheel before welding. Do not use wheel for other jobs or tungsten can become contaminated causing lower weld quality.

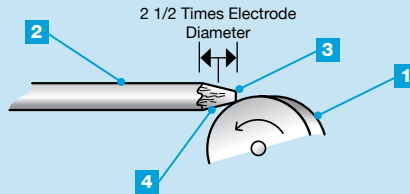
### 2 TUNGSTEN ELECTRODE

### 3 FLAT

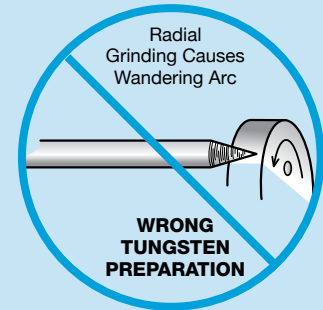
Diameter of this flat determines amperage capacity.

### 4 STRAIGHT GROUND

Grind lengthwise, not radial.



IDEAL TUNGSTEN PREPARATION - STABLE ARC

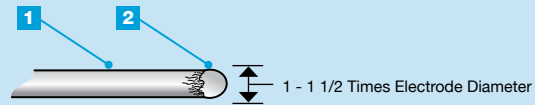


## 2. PREPARING TUNGSTEN FOR AC SINE WAVE & CONVENTIONAL SQUAREWAVE

### 1 TUNGSTEN ELECTRODE

### 2 BALLED END

Ball end of tungsten by applying AC amperage recommended for a given electrode diameter. Let ball on end of the tungsten take its own shape.



## TYPICAL CURRENT RANGES FOR TUNGSTEN ELECTRODES\*

ELECTRODE DIAMETER mm (in)	DIRECT CURRENT (A)		ALTERNATING CURRENT (A)			
	DC -	DC +	ADVANCED SQUAREWAVE		SQUAREWAVE	
			PURE TUNGSTEN	ALL TUNGSTEN EXCEPT PURE	PURE TUNGSTEN	ALL TUNGSTEN EXCEPT PURE
1.0 (0.040)	15 - 18	N/A	20 - 60	15 - 80	10 - 30	20 - 60
1.6 (0.060)	70 - 150	10 - 20	50 - 100	70 - 150	30 - 80	60 - 120
2.4 (0.093)	150 - 250	15 - 30	100 - 160	140 - 235	60 - 130	100 - 180
3.2 (1/8)	250 - 400	25 - 40	150 - 200	225 - 325	100 - 180	160 - 250
4.0 (5/32)	400 - 500	40 - 55	200 - 275	300 - 400	160 - 240	200 - 320
4.7 (3/16)	500 - 750	55 - 80	250 - 350	400 - 500	190 - 300	290 - 390

\*EWP: Pure tungsten

EWX-X: All other tungsten (except Pure)

Based on the use of Argon as a shielding gas. Other current values may be employed depending on the shielding gas, type of equipment, and application.



**Air Liquide recommends  
the use of argon and  
ALTIG shielding gases  
for your GTAW applications.**

# SAFETY PRODUCTS



Welding Jackets	2
Pants, Aprons, Cape Sleeves, Bibs and Sleeves	3
Gloves	5
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## Welding Jackets



The BLUESHIELD line of protective clothing provides complete protection, maximum freedom of movement and all-day comfort.

Finest grade leathers are treated to ensure the best quality available in the welding industry.

Air Liquide offers two types of welding garments: Flame Retardant cotton jackets and Flame and Heat Resistant leather welding jackets.

All jackets offer complete upper body protection against welding spatter. They fit comfortably over work clothes.

## FLAME RETARDANT WELDING JACKETS

9 oz FR fabric is 100% cotton and conforms to the washability and flame resistance test standards of ASTM 6413-11A. The material will retain its flame retardancy for up to 50 home washes or 25 commercial washes.

ITEM NUMBER	SIZE
BLU-04736040	M
BLU-04736042	L
BLU-04736044	XL
BLU-04736046	XXL

## LEATHER WELDING JACKETS

Blueshield welding jackets offer state of the art comfort. Great for overhead welding. All leather seams are double-lock stitched with high-strength 5-ply Tex 90 Dupont Kevlar thread. They feature flame retardant lined cotton collar and adjustable neck, cuff and waist. Premium grade side split for maximum durability. Raglan-style shoulders for comfort and mobility. Inside pocket, riveted stress points. Heat and electrical insulated snaps. Meets EN 470-1.

ITEM NUMBER	SIZE
BLU-04736010	M
BLU-04736020	L
BLU-04736030	XL
BLU-04736035	XXL
BLU-04736036	XXXL

Flame and heat resistant leather body with soft, pliable, oil and weather resistant sleeves. Light weight, cool and washable.

ITEM NUMBER	SIZE
BLU-04736055	L
BLU-04736056	XL



BLU-04736030



BLU-04736056

Pants, Aprons, Cape Sleeves, Bibs and Sleeves

PANTS

These Blueshield heat and flame resistant welding pants are made from durable and pliable split cowhide. All leather seams are double-locked stitched with high strength 5-ply Tex 90 Dupont Kevlar thread. Stress points are re-inforced with double leather or electrically insulated metal rivets and front snaps, 42" length. Meets EN 470-1.

ITEM NUMBER	SIZE
BLU-04738055	M
BLU-04738060	L
BLU-04738065	XL
BLU-04738070	XXL



BLU-04738065

APRONS

These aprons are made to last. Heavy-duty shoulder and waist straps combat neck discomfort. Come with front pockets.

ITEM NUMBER	DESCRIPTION	DIMENSIONS
BLU-04731020	Waist Apron	610 mm x 610 mm (24" x 24")
BLU-04731040	Bib Apron	610 mm x 914 mm (24" x 36")
BLU-04731060	Split-Leg Apron	610 mm x 914 mm (24" x 36")
BLU-04731065	Split-Leg Apron	610 mm x 1067 mm (24" x 42")



BLU-04731020



BLU-04731060

CAPE SLEEVES, BIBS AND SLEEVES

Air Liquide's cape sleeves, bib and sleeves score high where spatter is heavy on shoulders, neck, arms and front of body. Snap fasteners on cape sleeves permit easy bib attachment. The bib extends front protection when attached to cape sleeve. The sleeves provide wrist and arm protection for light welding and bench work.

ITEM NUMBER	SIZE	DESCRIPTION	WIDHT
BLU-04732005	M	Cape Sleeve	N/A
BLU-04732010	G		
BLU-04732015	TG		
BLU-04732020	TTG		
BLU-04731080	—	Bib	580 mm (23") long
BLU-04731090	—		711 mm (28") long
BLU-04739020	—	Sleeves	580 mm (23") long
BLU-04739025	—		500 mm (20") long



BLU-04731080



BLU-04732010



BLU-04739025

Comfortable, 500 mm (20") blue flame retardant cotton and black leather sleeves with elastic at each end.



BLU-04739020

TOOLS & WELDING ACCESSORIES

## Reference Table - Sizing of Garments

## PLEASE REFER TO THIS CHART WHEN CHOOSING YOUR JACKET AND/OR PANTS SIZE.

JACKET	CHEST SIZE
M	40-42
L	44-46
XL	48-50
XXL	52-54
XXXL	56-58

PANTS	WAIST	INSEAM
M	36	32
L	38	32
XL	42	34
XXL	46	34
XXXL	50	34

## SELECTING THE RIGHT GLOVE FOR THE RIGHT APPLICATION IS VERY IMPORTANT

### 1. APPLICATIONS

Wearing gloves that match the job provides good hand protection. Identify whether you will use the gloves for:

- + Heavy-Duty MIG Welding & Flame Cutting
- + Medium-Duty MIG Welding & Flame Cutting
- + Standard MIG Welding & Flame Cutting
- + TIG Welding
- + High-Heat MIG & TIG Welding
- + Material Handling Work
- + Production-Line Work
- + Maintenance Work
- + Cold-Weather Work



### 2. LEATHER TYPE

Different leather types offer different characteristics. Deer grain offers more fit and dexterity. Goat grain provides fit and light weight. Cowhide grain is pliable and heat resistant. Pig grain is more resistant to oil and abrasion. Split cowhide offers high heat and flame resistance.

### 3. FIT

Only sound, properly fitting gloves should be worn. Tight gloves limit dexterity and are uncomfortable. Overly large gloves can interfere with work. Use caution when wearing gloves near moving machinery parts. Gloved hands can be drawn into machines and the hands severely injured. Gloves should be long enough to cover the entire hand and part of the forearm. Wearing long sleeves will provide an extra barrier for the skin along with the gloves.

A good pair of leather-reinforced gloves is the cornerstone of welder hand protection. Leather provides good gripping power and protects hands when handling rough or abrasive materials. It also protects the hands from some sharp objects and cutting tools if slips happen.

**Recommendations:** Make sure you have extra gloves on hand. When gloves wear out, throw them away and use another pair. Do not use wet gloves in an electrical welding environment.

Gloves

# HEAVY-DUTY WELDING AND FLAME CUTTING GLOVES

IDEAL FOR MIG, STICK, FLAME CUTTING AND ALL HEAVY DUTY GENERAL PURPOSE WORK.



## BLUESHIELD SUPER BLUE

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
BLU-04734035	L	Gloves	Grain Deer skin
BLU-04737035	L	1-finger mitts	Grain Deer skin

## BLUESHIELD PREMIUM PIPELINER

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
BLU-04732700	S	Double leather side back of left hand	Grain Deer skin
BLU-04732701	M		
BLU-04732702	L		
BLU-04732703	XL		
BLU-04732704	XXL		

## BLUESHIELD BLUE CUSHION

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
BLU-04734040	L	Gloves	Split Cowhide (Top grade)
BLU-04737040	L	1-finger mitts	Split Cowhide (Top grade)

## BLUESHIELD GLOVE

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
BLU-04734020	L	Gloves	Split Cowhide (Top grade)
BLU-04737020	L	1-finger mitts	Split Cowhide (Top grade)



TOOLS &  
WELDING  
ACCESSORIES

## Gloves

# MEDIUM-DUTY WELDING AND FLAME CUTTING GLOVES

IDEAL FOR MIG, STICK, FLAME CUTTING AND ALL MEDIUM-DUTY GENERAL PURPOSE WORK.

## BLUESHIELD PIPELINERS

Blueshield Pipeliners are a welder's favorite gloves. Cowhide-grain gloves with a left-hand or right-hand protective patch. Produced with 4-ply high-quality Kevlar thread and lock stitch.

ITEM NUMBER	SIZE	LEATHER TYPE	DOUBLE LEATHER SIDE
BLU-04732705	S	Grain Cowhide	Back of left hand
BLU-04732706	M		
BLU-04732707	L		
BLU-04732708	XL		
BLU-04732709	XXL		Back of right hand
BLU-04732711	M		
BLU-04732712	L		



## BLUESHIELD MIG GLOVES

ITEM NUMBER	SIZE	DESCRIPTION
BLU-04734085	L	Heat and flame resistant. Soft and supple grain calfskin leather for ultimate dexterity. Kevlar stitched for durability. Extra long cuff and forearm for more protection.
BLU-04734086	XL	



## BLUESHIELD BLUE CLAD

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
BLU-04736005	L	Gloves	Split Cowhide (Selected grade)
BLU-04736001	L	1-finger mitts	



## STANDARD-DUTY WELDING & FLAME CUTTING GLOVES

Ideal for all standard-duty MIG, Stick, Flame Cutting and general purpose work.

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
WLA-2114L	L	Standard Welding Glove	Split Cowhide





## Gloves

# TIG WELDING GLOVES

IDEAL FOR TIG WELDING WHERE DEXTERITY AND COMFORT ARE NEEDED.

## BLUESHIELD TIG GLOVES

ITEM NUMBER	SIZE	DESCRIPTION
BLU-04735085	L	Heat and flame resistant. Soft and supple grain calfskin leather for ultimate dexterity. Kevlar stitched for durability. Extra long cuff and forearm for more protection.
BLU-04735086	XL	



BLU-04735085

## TECHMATES

ITEM NUMBER	SIZE	APPLICATION	LEATHER TYPE
BLU-04735049	S	TIG, Plasma	Grain Cowhide
BLU-04735050	M		
BLU-04735055	L		
BLU-04735056	XL		
BLU-04735057	XXL		



BLU-04735055



BLU-04735075

## BLUE DEER TIGGER

ITEM NUMBER	SIZE	APPLICATION	LEATHER TYPE
BLU-04735070	M	TIG, Plasma	Grain Deer Skin
BLU-04735075	L		



BLU-04735065

## TIGGER

ITEM NUMBER	SIZE	APPLICATION	LEATHER TYPE
BLU-04735060	M	TIG, Plasma	Grain Cowhide
BLU-04735065	L		



WLA-1003L

## STANDARD TIG

ITEM NUMBER	SIZE	APPLICATION	LEATHER TYPE
WLA-1003L	L	TIG, Plasma	Pigskin



BLU-102660L

# MECHANICS GLOVES

ITEM NUMBER	SIZE	DESCRIPTION
BLU-102660L	L	Soft, pliable, oil and weather resistant washable pigskin leather.
BLU-102660XL	XL	

## Work Gloves and High-Heat

# WORK GLOVES

FOR MATERIAL HANDLING, PRODUCTION LINE WORK AND GENERAL PURPOSE WORK

## BLUESHIELD WORK GLOVES

ITEM NUMBER	SIZE	DESCRIPTION
BLU-04734025	L	Select split cowhide on palm, thumb and finger tips

BLU-04734025



## MEDIUM DUTY WORK GLOVES

ITEM NUMBER	SIZE	DESCRIPTION
WLA-2215L	L	Standard, leather palm work gloves, split cowhide

WLA-2215L



## COLD WEATHER GLOVES

ITEM NUMBER	SIZE	DESCRIPTION
WLA-2289L	L	With Turmoflex Lining, grain pigskin

WLA-2289L



# HIGH-HEAT GLOVES

IDEAL FOR HIGH AMPERAGE / HIGH-HEAT APPLICATIONS AND PROCESSES SUCH AS FCAW, MCAW

## MIG HIGH-HEAT RESISTANT GLOVES

ITEM NUMBER	SIZE	DESCRIPTION	LEATHER TYPE
WLA-2900L	L	High-heat welding gloves, large	Split Cowhide (Top grade)
WLA-2385L	L	Reflective high-heat welding gloves with aluminized back, large	Split Cowhide (Top grade)

WLA-2900L



WLA-2385L



## TIG AND PLASMA HIGH-HEAT RESISTANT GLOVES

ITEM NUMBER	SIZE	APPLICATION	LEATHER TYPE
WLA-2850L	L	High-Heat TIG and Plasma	Grain deerskin

WLA-2850L



## ALUMINIZED HAND-HEAT SHIELD

ITEM NUMBER	APPLICATION
WLA-3006	These heat reflective, aluminized hand-heat shields are excellent for high-deposition, high radiant heat applications. Lightweight and flexible with a 15 oz flame resistant, double mirror aluminized rayon material.

WLA-3006



Accessories

AIR LIQUIDE OFFERS A WIDE SELECTION OF ACCESSORIES. ALL ACCESSORIES ARE MADE OF PREMIUM QUALITY MATERIALS AND DESIGNED TO LAST.

ITEM NUMBER	DESCRIPTION
BLU-04735010	Electrodes are easily accessible with this rod holder featuring double-leather bottom and metal swivel clip. features 5-ply Kevlar stitches with rivet reinforcement for extra durability.
WLA-4022	TIG torch cable cover. Light weight, durable leather cable and hose protector. With metal snaps every 7.6 cm (3"). 10.2 cm (4") W x 6.7 m (22') L
WLA-3100V	Comfortable air-cushioned sweatbands for non-suspender type headgear.
WLA-3200V	Comfortable air-cushioned sweatbands for suspender type headgear.
BLU-BEANIES	Comfortable beanie, spark resistant, flexible and absorbent.
BLU-FRBEANIES	Three-panel 100% flame retardant cotton beanie with elastic.
BLU-BIKERBEANIE	Comfortable biker-style beanie, lightweight, flexible and absorbent.



BLU-04735010



WLA-4022



BLU-BEANIES



WLA-3200V



BLU-BIKERBEANIE



BLU-FRBEANIES



WLA-3100V

TOOLS &  
WELDING  
ACCESSORIES

## Personal Protective Equipment

# HEAD, FACE, EYE, RESPIRATORY PROTECTION

Personal protection equipment should be considered for occupations such as, but not limited to, welders, carpenters, electricians, machinists, mechanics, plumbers and pipefitters, lathe and milling machine operators, grounds-keepers and employees using chemicals.

## RECOMMENDATIONS\*:

- + All personal protective equipment shall comply with job-specified safety standards.
- + Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate personal protection against the highest level of each hazard should be required.
- + As a general rule, when required, face shields are worn over primary eye protection.
- + Wearers of contact lenses must wear appropriate eye and face protection devices in a hazardous environment. Dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
- + Operations involving heat may produce light radiation. Personal protection from both hazards is required.
- + Protection from light radiation is directly related to spectacle filter density. Select the darkest shade that allows task performance.
- + Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.

	SOURCE/ACTIVITY	HAZARD	HEAD, FACE, EYE PROTECTION	RESPIRATORY PROTECTION <sup>1</sup>	HAND PROTECTION
IMPACT	Grinding, machining, masonry work, woodworking, sawing, drilling, powered fastening, riveting and sanding	Flying fragments, objects, chips and sand particles	Hard hats. Spectacles with side protection, goggles and face shields.	N95 respirator	Work gloves Nitrile coated
HEAT	Welding, furnace operations, pouring and casting	Hot sparks	Hard hats. Goggles, spectacles with side protection. For severe exposure, use face shields.	R95 respirator	High heat resistant gloves
		Splash from molten metals	Hard hats. Face shields worn over goggles.		
		High temperature exposure	Hard hats. Screen face shields, reflective face shields.		
DUST	Woodworking, buffing, and grain and coal handling	Dust	Goggles	N95 respirator	Work gloves
LIGHT and/or RADIATION	Welding - Electric Arc	Optical radiation	Welding helmets or shields. Shades: 10-14	N95 respirator	MIG, TIG welding gloves
	Welding - Gas	Optical radiation	Welding goggles or face shields. Shades: gas welding 4-8, cutting 3-6, brazing 3-4		
	Cutting, Torch Brazing, Torch Soldering	Optical radiation	Spectacles or welding face shield. Shades 1.5-3		
	Lasers	Thermal exposure, acoustic, photochemical	Protective eyewear with an optical density for the specific application. Refer to the laser manufacturer's operations manual or ANSI Z136.1		
CHEMICALS	Laboratory research, chemical handling and transferring, custodial, construction and maintenance operations	Splash	Goggles, eyecups, face shields. See Material Safety Data Sheets for appropriate eye and face protection.	R95 respirator	Nitrile coated gloves
		Vapour and gas exposures	Goggles must be non-ventilated. See Material Safety Data Sheet for appropriate eye and face protection.		

<sup>1</sup> Please refer to page H-22 for item numbers.

\* The recommendations are general. If additional information is required, please refer to CSA W117.2 standard, Safety in Welding, Cutting and Allied Processes.

## Filter Shade Selection Guide

# RECOMMENDED SHADE PROTECTION FOR ARC PROCESSES

(FROM CSA W117.2-12)<sup>3</sup>

PROCESS DESCRIPTION	ELECTRODE SIZE		ARC CURRENT A	MINIMUM PROTECTIVE SHADE	SUGGESTED SHADE <sup>1</sup> (comfort)
	mm	in			
Shielded-Metal Arc Welding (SMAW)	< 2.5	< 3/32	< 60	7	—
	2.5 - 4.0	3/32 - 5/32	60 - 160	8	10
	4.0 - 6.4	5/32 - 1/4	160 - 250	10	12
	> 6.4	> 1/4	250 - 550	11	14
Gas-Metal Arc Welding (GMAW) Flux-Cored Arc Welding (FCAW) Metal-Cored Arc Welding (MCAW)			< 60	7	—
			60 - 160	10	11
			160 - 250	10	12
			250 - 550	10	14
Gas-Tungsten Arc Welding (GTAW)			< 50	8	10
			50 - 150	8	12
			150 - 500	10	14
Plasma Cutting <sup>2</sup> (PAC) Light Medium Heavy			20 - 100	8	9
			100 - 400	9	12
			400 - 800	10	14
Air Carbon Arc Cutting			< 500	10	12
			500 - 1000	11	14

<sup>1</sup> Shade numbers are given as a guide and can be varied to suit individual needs. It is recommended to start with a darker shade to view the weld zone and then reduce to a lighter shade (without going below the minimum) to suit individual needs. In oxy-fuel gas welding or cutting, it is better to use a filter lens that absorbs the yellow or sodium line in the visible light emitted by the operation. Please refer to page H-17 for item numbers.

<sup>2</sup> If the arc is clearly seen. If the arc is hidden by the workpiece, lighter filters may be used.

<sup>3</sup> In the U.S. use ANSI/AWS standard F2.2 for selecting filter lens shades.

# RECOMMENDED SHADE PROTECTION FOR CUTTING APPLICATIONS

(FROM CSA W117.2-12)

DESCRIPTION	PLATE THICKNESS		MINIMUM PROTECTIVE SHADE	SUGGESTED SHADE
	mm	in		
Oxy-Fuel Cutting				
	< 25	< 1	3	4
	25 - 150	1 - 6	4	5
	> 150	> 6	5	6

<sup>1</sup> Please refer to page H-17 for item numbers.



# SAFETY GLASSES

Air Liquide offers a complete line of safety eyewear for the most demanding applications.

Workers can expect comfort and a customized fit for virtually any head size.

Wraparound lenses are constructed of lightweight, scratch-resistant polycarbonate.

Most safety glasses meet ANSI Z87.1 and CSA Z94.3 standards for optical clarity and impact resistance.

ITEM NUMBER	DESCRIPTION	SHADE / LENS	FRAME
3MC-113740000020	3MC, BX Reader	Clear, Diopter 1.5	Silver
3MC-113750000020	3MC, BX Reader	Clear, Diopter 2.0	Silver
3MC-113760000020	3MC, BX Reader	Clear, Diopter 2.5	Silver
3MC-113431000020	3MC, Metaliks Sport	Clear	Nickel
3MC-113441000020	3MC, Metaliks Sport	Gray	Nickel
3MC-122610000020	3MC, Privo	Clear	Black
3MC-122620000020	3MC, Privo	Gray	Black
3MC-122640000020	3MC, Privo	Mirror	Black
3MC-115090000020	3MC, Virtua Max	Clear	Clear
3MC-115110000020	3MC, Virtua Max	Gray	Gray
3MC-113840000020	3MC, Virtua Sport	Clear	Clear
3MC-113850000020	3MC, Virtua Sport	Clear, anti-fog	Clear
3MC-113860000020	3MC, Virtua Sport	Gray, hard coat	Gray
SEL-76301	Sellstrom, Sebring 400	Clear	Black
SEL-76601	Sellstrom, Sebring 400	Clear	Blue
SEL-76671	Sellstrom, Sebring 400	Gray	Blue
SEL-76231	Sellstrom, Grafit	Shade 3	Black
SEL-76251	Sellstrom, Grafit	Shade 5	Black



3MC-113740000020



3MC-113431000020



3MC-113441000020



3MC-122610000020



3MC-122620000020



3MC-115090000020



3MC-115110000020



3MC-113840000020



3MC-113860000020



SEL-76601



SEL-76231



SEL-76671

Goggles

# BLUESHIELD WELDING GOGGLES

Air Liquide offers a variety of goggle designs. Blueshield goggles are the industry's top quality brand.



ITEM NUMBER	DESCRIPTION	SHADE	LENS	STANDARDS
BLU-04803005	Lift front	Shade 5	51 mm x 108 mm (2" x 4-1/4")	ANSI Z.87.1, CAN/CSA-Z94.3
BLU-04803006	Fixed front	Shade 5	51 mm x 108 mm (2" x 4-1/4")	
BLU-04803015	Round Lift front	Shade 5	50 mm dia. (1.97")	
BLU-04803016	Round Fixed front	Shade 5	50 mm dia. (1.97")	
BLU-04803025	Round Eye cup	Shade 5	50 mm dia. (1.97")	



TOOLS &  
WELDING  
ACCESSORIES

# FACESHIELDS AND HEADGEAR

Air Liquide offers high-performance faceshields to help provide extended wraparound protection for tough working conditions.

A wide selection of windows and screens provides full face protection for every application.

Always wear safety glasses under faceshield for maximum protection.

## FIBER-METAL HEADGEAR ONLY

ITEM NUMBER	DESCRIPTION
FIB-F300	76 mm (3") Crown c/w ratchet headband
FIB-F400	102 mm (4") Crown c/w ratchet headband
FIB-F500	178 mm (7") Crown c/w ratchet headband

## FIBER-METAL FACESHIELDS

ITEM NUMBER	DESCRIPTION	FITS HEADGEAR
FIB-4118C	Standard view, clear	F300
FIB-4118G	Standard view, dark green	F300
FIB-4178C	Wide view, clear	F400 and F500
FIB-4178G	Wide view, dark green	F400 and F500
FIB-4178IR50	Wide view, shade 5 IR/UV	F400 and F500
FIB-4199C	Extended view, clear	F400 and F500
FIB-4199G	Extended view, dark green	F400 and F500
FIB-4199IR50	Extended view, shade 5 IR/UV	F400 and F500



FIB-4178C

## 3M HEADGEAR / FACESHIELD COMBO

ITEM NUMBER	DESCRIPTION
3MC-8278300000	H8A Headgear c/w WP96 clear polycarbonate faceshield



3MC-8250100000

## 3M HEADGEAR ONLY

ITEM NUMBER	DESCRIPTION
3MC-8250100000	H8A Headgear, ratchet adjustment

## 3M FACESHIELDS

ITEM NUMBER	DESCRIPTION
3MC-8270000000	W96, clear, propionate
3MC-8270100000	WP96, clear, polycarbonate
3MC-8270610000	WP96, shade 5 IR/UV, polycarbonate



SEL-32151

## SELLSTROM HEADGEAR / FACESHIELD COMBO

ITEM NUMBER	DESCRIPTION
SEL-39110	Blue crown, 39100 c/w clear faceshield 35000
SEL-32151	DP4 Combo, black crown 32001 c/w clear faceshield 32100 and flip front shade 5IR 32155

## SELLSTROM HEADGEAR ONLY

ITEM NUMBER	DESCRIPTION
SEL-39100	Blue crown, 390 Series, c/w ratchet headband
SEL-32001	Black crown for DP4 flip front, c/w ratchet headband

## SELLSTROM FACESHIELDS

ITEM NUMBER	DESCRIPTION
SEL-35000	Clear, 200 mm (8") x 300 mm (12"), 390 Series
SEL-35050	Shade 5IR, 200 mm (8") x 300 mm (12"), 390 Series
SEL-32100	Clear, DP4 Series
SEL-32155	Shade 5IR, Flip front, DP4 Series



SEL-32100

# AUTO-DARKENING WELDING HELMETS

Auto-darkening welding helmets are modern welding wonders. The lens automatically darkens when a welding arc is struck, and returns to a light state when welding ceases. It allows the welder to work without continuously removing the helmet.

Available in battery-powered or solar varieties in either fixed or variable shades and various lens sizes, Air Liquide has the perfect autodarkening welding helmet for all welding applications.

ITEM NUMBER	DESCRIPTION	SHADE	VIEWING AREA
<b>BLU-23000SAL</b>	Blueshield auto-darkening welding helmet Auto-delay and sensitivity settings	Variable Shades 8-12	8.37 in <sup>2</sup>
<b>3MC-06010010SW</b>	3M Speedglas 9100 Series With 9100V Filter.	Dark state Shades 5, 8 and 9-13	6.49 in <sup>2</sup>
<b>3MC-06010020SW</b>	3M Speedglas 9100 Series With 9100X Filter.	Dark state Shades 5, 8 and 9-14	8.96 in <sup>2</sup>
<b>3MC-06010030SW</b>	3M Speedglas 9100 Series With 9100XX Filter.	Dark state Shades 5, 8 and 9-15	12.10 in <sup>2</sup>
<b>3MC-06060010SWCA</b>	3M Speedglas 9100FX Series With 9100V Filter.	Dark state Shades 5, 8 and 9-16	6.49 in <sup>2</sup>
<b>3MC-06060020SWCA</b>	3M Speedglas 9100FX Series With 9100X Filter.	Dark state Shades 5, 8 and 9-17	8.96 in <sup>2</sup>
<b>3MC-06060030SWCA</b>	3M Speedglas 9100FX Series With 9100XX Filter.	Dark state Shades 5, 8 and 9-18	12.10 in <sup>2</sup>
<b>3MC-26110110SWCA</b>	3M Speedglas 9100FX-Air Series With 9100V Filter.	Dark state Shades 5, 8 and 9-19	6.49 in <sup>2</sup>
<b>3MC-26110120SWCA</b>	3M Speedglas 9100FX-Air Series With 9100X Filter.	Dark state Shades 5, 8 and 9-20	8.96 in <sup>2</sup>
<b>3MC-26110130SWCA</b>	3M Speedglas 9100FX-Air Series With 9100XX Filter.	Dark state Shades 5, 8 and 9-21	12.10 in <sup>2</sup>
<b>3MC-07001231BL</b>	3M Speedglas S100 Series With Auto-Darkening Filter 100V	Variable Shades 8-12	6.34 in <sup>2</sup>
<b>3MC-05001341</b>	3M Speedglas SL Series Super Light Weight	Variable Shades 8-12 Light shade 3	6.05 in <sup>2</sup>
<b>MIL-251292</b>	Miller Classic Series VS / Black	Variable Shades 8-12 Light State 3	5.15 in <sup>2</sup>
<b>MIL-256159</b>	Miller Digital Performance Series / Black	Cut 5-8 Weld 8-13	7.22 in <sup>2</sup>
<b>MIL-257213</b>	Miller Digital Elite Series / Black	Cut 5-8 Weld 8-13	9.22 in <sup>2</sup>

**A large variety of models is available with exciting graphics!  
Ask to see the full selection!**

BLU-23000SAL



3MC-06010010SW



3MC-06060030SWCA



3MC-26110120SWCA



3MC-07001231BL



3MC-05001341



MIL-251292



MIL-256159



MIL-257213



# WELDING HELMETS

A wide variety of fiberglass and thermoplastic welding helmets in many colours and graphic designs is available.

Helmets come in either 2" x 4 1/4" or 4 1/2" x 5 1/4" fixed or lift frame lenses and wide vision in all shades.

Meet ANSI Z.87.1-2003 and CSA-Z.94.3

ITEM NUMBER	DESCRIPTION	FRONT MODULE	SHELL MATERIAL	LENS
<b>SEL-244010002</b>	Blue Sellstrom Titan Air Liquide w/ silver bezel	Fixed Front	Nylon	115 mm x 134 mm (4 1/2" x 5 1/4")
<b>SEL-293410002</b>	Blue Sellstrom 290 Series Air Liquide	Lift Front	Nylon	51 mm x 108 mm (2" x 4 1/4")
<b>SEL-299410002</b>	Blue Sellstrom 290 Series Air Liquide	Fixed Front	Nylon	115 mm x 134 mm (4 1/2" x 5 1/4")
<b>SEL-29311</b>	Silver Sellstrom 290 Series	Lift Front	Nylon	51 mm x 108 mm (2" x 4 1/4")



ITEM NUMBER	DESCRIPTION	FRONT MODULE	SHELL MATERIAL	LENS
<b>FIB-110</b>	White Fibre-Metal Pipeliner, with ratchet headgear	Fixed Front	SuperGlas Plus	51 mm x 108 mm (2" x 4 1/4")
<b>FIB-110P</b>	White Fibre-Metal with rubber headband suspension	Fixed Front	SuperGlas Plus	51 mm x 108 mm (2" x 4 1/4")
<b>FIB-706</b>	Gray Fibre-Metal SuperGlas™	Lift Front	SuperGlas™	51 mm x 108 mm (2" x 4 1/4")
<b>FIB-998</b>	Gray Fibre-Metal Handshield	Fixed Front	Thermoplastic	115 mm x 134 mm (4 1/2" x 5 1/4")
<b>FIB-906BLUE</b>	Blue Fibre-Metal Tigerhood	Lift Front	Thermoplastic	51 mm x 108 mm (2" x 4 1/4")
<b>FIB-906GREY</b>	Gray Fibre-Metal Tigerhood	Lift Front	Thermoplastic	51 mm x 108 mm (2" x 4 1/4")
<b>FIB-990</b>	Blue Fibre-Metal Tigerhood	Fixed Front	Thermoplastic	115 mm x 134 mm (4 1/2" x 5 1/4")





# BLUESHIELD FILTER PLATES

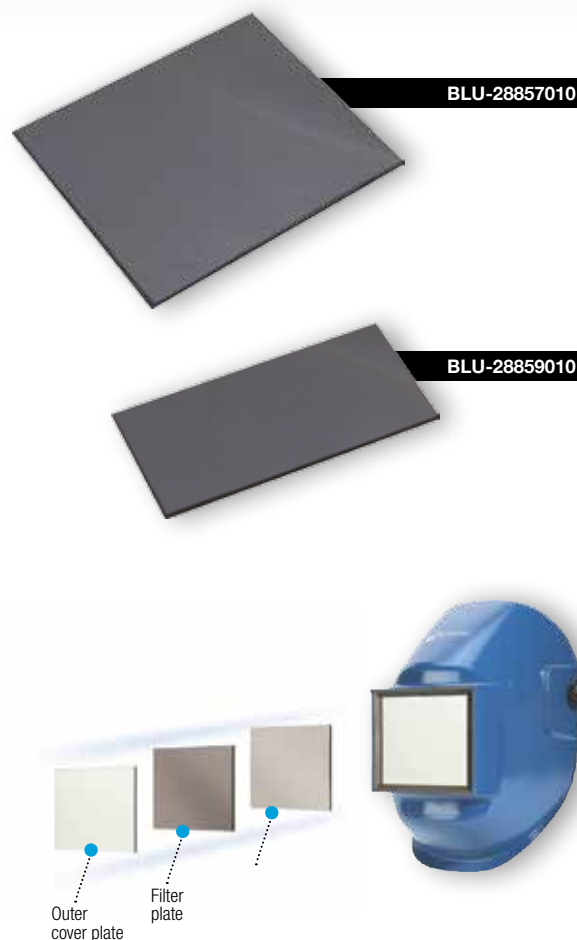
Blueshield filter plates provide protection against excessive glare and harmful UV and IR light.

Hardened glass is heat-treated for strength. Precision ground and pencil edged to eliminate stress flaws. Meets or exceeds ANSI Z87.1 and CSA Z94.3 standards.

**Caution:** Shades 3-6 should never be used for electric arc welding.

## BLUESHIELD GLASS FILTER PLATES

ITEM NUMBER	SHADE	DIMENSIONS	
		MM	IN
BLU-28857005	5	114 x 133	4 1/2 x 5 1/4
BLU-28857006	6		
BLU-28857008	8		
BLU-28857009	9		
BLU-28857010	10		
BLU-28857011	11		
BLU-28857012	12		
BLU-28857013	13		
BLU-28857014	14		
BLU-28859003	3	51 x 108	2 x 4 1/4
BLU-28859004	4		
BLU-28859005	5		
BLU-28859006	6		
BLU-28859007	7		
BLU-28859008	8		
BLU-28859009	9		
BLU-28859010	10		
BLU-28859011	11		
BLU-28859012	12		
BLU-28859013	13		
BLU-28859014	14		
BLU-28852003	3	50	2
BLU-28852004	4		
BLU-28852005	5		
BLU-28852006	6		
BLU-28852008	8		



TOOLS &  
WELDING  
ACCESSORIES

## CLEAR COVER & SAFETY PLATES

Always use an outer cover plate to protect filter plates from damage by weld spatter, pitting and scratching.

Impact resistant safety plates should be installed in the inside frame of lift front helmets and goggles, next to the eyes, to protect against flying particles when the front is lifted.

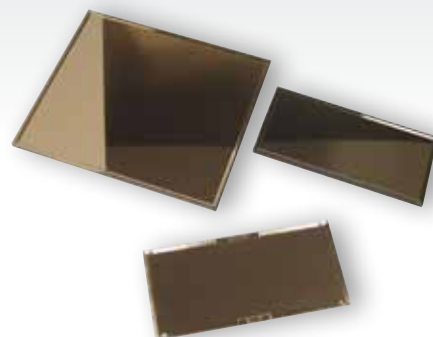
GLASS STANDARD COVER PLATE	POLYCARBONATE IMPACT RESISTANT SAFETY/COVER PLATE	CR-39 LONG LIFE COVER PLATE	DIMENSIONS	
			MM	IN
BLU-28409606	BLU-28853000	BLU-28853001	51 x 108	2 x 4 1/4
BLU-28409604	BLU-28854000	BLU-28854001	114 x 133	4 1/2 x 5 1/4
BLU-04853853	BLU-04801027		50	2

# BLUESHIELD LENSES

## BLUESHIELD GOLD-COATED LENSES

This specially designed lens reflects heat and infrared rays. The reduced glare allows the welder to see work more clearly. Special hard-coated polycarbonate is abrasion and breakage resistant. Meet or exceed ANSI Z87.1 and CSA Z94.3 standards.

ITEM NUMBER POLYCARBONATE	SHADE	DIMENSIONS	
		MM	IN
BLU-28856009	9	51 x 108	2 x 4 1/4
BLU-28856010	10		
BLU-28856011	11		
BLU-28856012	12		
BLU-28858009	9	114 x 133	4 1/2 x 5 1/4
BLU-28858010	10		
BLU-28858011	11		
BLU-28858012	12		



## BLUESHIELD MAGNIFYING LENSES

Magnifying lenses help optically correct vision - reduce red eye fatigue and irritation. Lightweight, 1/3 the weight of glass. Hard-coated polycarbonate is shatterproof and abrasion resistant.

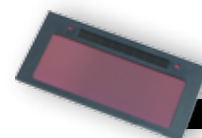
ITEM NUMBER GLASS	ITEM NUMBER POLYCARBONATE	DIOPTER	DIMENSIONS	
			MM	IN
BLU-MAG075G24	BLU-MAG075P24	0.75	51 x 108	2 x 4 1/4
BLU-MAG100G24	BLU-MAG100P24	1.00		
BLU-MAG125G24	BLU-MAG125P24	1.25		
BLU-MAG150G24	BLU-MAG150P24	1.50		
BLU-MAG175G24	BLU-MAG175P24	1.75		
BLU-MAG200G24	BLU-MAG200P24	2.00		
BLU-MAG225G24	BLU-MAG225P24	2.25		
BLU-MAG250G24	BLU-MAG250P24	2.50		
BLU-MAG300G24	—	3.00		
BLU-MAG350G24	—	3.50		



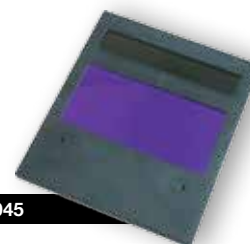
## BLUESHIELD SOLAR-POWERED AUTODARKENING WELDING FILTERS

Solar powered. Change from shade 3 to shade 11 in 0.5 millisecond. Provide IR/UV protection of shade 16 in light or dark state. Can be used for stick, MIG, TIG welding and plasma cutting/welding. Lightweight.

ITEM NUMBER	DESCRIPTION	DIMENSIONS	
		MM	IN
BLU-28859024	Autodarkening welding filter fits standard welding helmets, shade 11	2 x 4 1/4	51 x 108
BLU-28859045	Autodarkening welding filter fits standard welding helmets, shade 11	4 1/2 x 5 1/4	114 x 133



BLU-28859024



BLU-28859045

# HARD HATS

Head injuries are among the most common injuries occurring in all industries. Industry standards have been established to help protect against these injuries. Air Liquide offers a selection of hard hats for personal protection.

## THERMOPLASTIC HARD HATS

### 3M™ SERIES 701

LIGHTWEIGHT, DURABLE, POLYETHYLENE  
CSA Z94.1 TYPE 1, CLASS C, G AND E

ITEM NUMBER	DESCRIPTION
3MC-H701RUVL	White with Air Liquide Logo, 4-point ratchet suspension
3MC-H701R	White, 4-point ratchet suspension
3MC-H702R	Yellow, 4-point ratchet suspension
3MC-H703R	Blue, 4-point ratchet suspension
3MC-H704R	Green, 4-point ratchet suspension
3MC-H708R	Grey, 4-point ratchet suspension



3MC-H701RUVL



3MC-H702R

## FIBERGLASS HARD HATS

### FIBRE-METAL® ROUGHNECK

HIGH PERFORMANCE, INJECTION-MOLDED FIBERGLASS CSA  
Z94.1 TYPE 1, CLASS G AND C

ITEM NUMBER	DESCRIPTION
FIB-P2AQRW09	Grey, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW71	Blue, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW01	White, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW46	Orange, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW02	Yellow, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW11	Black, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW74	Green, 8-point ratchet suspension w/Quick-Lok™
FIB-P2AQRW15	Red, 8-point ratchet suspension w/Quick-Lok™

FIB-P2AQRW09



FIB-P2AQRW71

TOOLS &  
WELDING  
ACCESSORIES

## Hearing Protection

Air Liquide offers a full line of comfortable, easy-to-use hearing protectors, including ear plugs and ear muffs.

Many welding and welding-related applications generate noise that can result in hearing loss if workers are unprotected over a period of time. Proper use of hearing protection helps reduce the risk of hearing loss due to noise.

## EAR PLUGS

ITEM NUMBER	DESCRIPTION
<b>3MC-1100</b>	Soft, comfortable and unobtrusive hearing protection. Tapered to comfortably fit the ear canal. Noise reduction rating: 29 dB.
<b>3MC-1110</b>	Soft, corded foam ear plugs that conform to the unique shape of each ear for excellent hearing protection and comfort. Features a cord for convenience and to prevent loss of ear plugs. Noise reduction rating: 29 dB.
<b>3MC-3121208</b>	Bell shaped E-Z-Fit™, uncorded. Noise reduction rating: 28 dB.
<b>3MC-3121219</b>	Soft, polyurethane foam. Uncorded. TaperFit™. Noise reduction rating: 32 dB.
<b>3MC-3121222</b>	Bell shaped E-Z Fit™, corded. Noise reduction rating: 28 dB.

**3MC-1100****3MC-1110**

## EAR MUFFS

ITEM NUMBER	DESCRIPTION
<b>3MC-H505B</b>	Welding earmuff designed to fit under welding helmets. Low profile and light weight with comfortable sealing rings.



# RESPIRATORY PROTECTION

Welding can create a variety of fumes and gases presenting unique respiratory protection challenges. Air Liquide provides a full line of respirators and other products to help enhance worker safety.

## DUST/MIST DISPOSABLE RESPIRATORS, N95 CLASSIFICATION

Designed for applications such as grinding, sanding, weeping, bagging and other dusty operations. Standard durability.

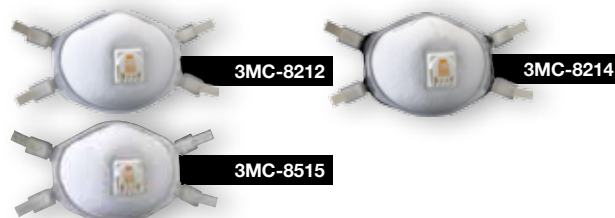
**3MC-8210, 3MC-8210V** (with Cool Flow valve), **3MC-8511, 3MC-8271**



## WELDING FUME DISPOSABLE RESPIRATORS, N95 CLASSIFICATION

Designed for applications such as welding, soldering and other operations where metal fumes may be present, including those with ozone and nuisance-level organic vapours. Very good durability.

**3MC-8515, 3MC-8212, 3MC-8214**



## HALF FACEPIECE REUSABLE RESPIRATORS

**3MC-6100, 3MC-6200, 3MC-6300, 3MC-2091**



## RUGGED COMFORT HALF FACEPIECE REUSABLE RESPIRATORS

Rugged comfort, half facepiece. Quick-Latch reusable respirator.

**3MC-6501QL** (Small), **3MC-6502QL** (Medium), **3MC-6503QL** (Large)



## HALF FACEPIECE ULTIMATE REUSABLE RESPIRATORS

Designed for applications such as welding, soldering and other operations where metal fumes may be present, including those with ozone and nuisance-level organic vapours. Excellent durability.

**3MC-7501** (Small), **3MC-7502** (Medium), **3MC-7503** (Large)

**3MC-2091** (Filters come separately)



## MILLER HALF-MASK REUSEABLE RESPIRATOR

Low profile filter design fits comfortably under a welding helmet.

**MIL-ML00894** LPR-100 half mask

**MIL-SA00818** replacement P100 filters (set of 2)



## MILLER COOLBELT BELT-MOUNTED COOLING SYSTEM



## MILLER COOLBAND HEADGEAR COOLING SYSTEM

Air vents reduce fogging.

**MIL-244094**



# 3M RESPIRATORS

ITEM NUMBER	PACKAGING	FEATURES 3M™ COOL FLOW™ VALVE	SUGGESTED APPLICATIONS			SUGGESTED INDUSTRIAL/MARKETS C = CONSTRUCTION H = HOME
			PARTICULATES FROM WOOD AND DRYWALL SANDING, GRINDING, SWEEPING, MACHINING, FIBREGLASS INSULATION	PARTICULATES AND NUISANCE ODOUR RELIEF	WELDING AND METAL POURING	

## DUSTY CONDITIONS

3MC-8210	N95 20 each/box 8 box/case		X			C & H
3MC-8210V	N95 10 each/box 8 box/case	X	X			C & H
3MC-8511	N95 10 each/box 8 box/case	X	X			C & H
3MC-8271	P95 10 each/box 8 box/case	X	X			C & H
3MC-9210	N95 20 each/box 12 box/case		X			C & H
3MC-9211	N95 10 each/box 12 box/case	X	X			C & H

## WELDING AND METAL POURING

3MC-8515	N95 10 each/box 8 box/case	X			X	
3MC-8212	N95 10 each/box 8 box/case	X			X**	
3MC-8214	N95 10 each/box 8 box/case	X		X	X**	

Follow the requirements of the authority having jurisdiction in your region. 3M and Cool Flow are trademarks of 3M.

**WARNING!**  
These respirators help protect against certain particles. Misuse may result in sickness or death.  
For proper use, see user instructions, supervisor or contact 3M.

3M and Cool Flow are trademarks of 3M.

# ABRASIVES



<b>WALTER</b> Cutting	2
<b>WALTER</b> Grinding	6
<b>WALTER</b> Blending	11
<b>WALTER</b> Brushing	14

<b>WALTER</b> Tooling	16
<b>WALTER</b> Power Tools	17
<b>WALTER</b> Sanding	19

## WALTER Cutting

# ZIPCUT™

They cut faster, freer and cooler, requiring less power than standard thin cut-off wheels. They are heavily reinforced for extra safety and yet are very flexible and resilient to resist twisting and bending and will give a true and straight cut every time.



### ZIPCUT - TYPE 1 THIN CUT-OFF WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T042	4 1/2" (114.3 mm)	3/64" (1.14 mm)	7/8"	1	A-60-ZIP	—	13300	25
WAL-11T052	5" (127 mm)	3/64" (1.14 mm)	7/8"	1	A-60-ZIP	—	10200	25
WAL-11T062	6" (152.4 mm)	3/64" (1.14 mm)	7/8"	1	A-60-ZIP	—	10200	25
WAL-11T072	7" (177.8 mm)	1/16" (1.57 mm)	7/8"	1	A-30-ZIP	—	8600	25

### ZIPCUT - TYPE 27

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T142	4 1/2" (114.3 mm)	3/64" (1.14 mm)	7/8"	27	A-60-ZIP	—	13300	25
WAL-11T152	5" (127 mm)	3/64" (1.14 mm)	7/8"	27	A-60-ZIP	—	12200	25
WAL-11T162	6" (152.4 mm)	3/64" (1.14 mm)	7/8"	27	A-60-ZIP	—	10200	25
WAL-11T172	7" (177.8 mm)	1/16" (1.57 mm)	7/8"	27	A-30-ZIP	—	8600	25

# COMBO ZIP™

These high performance cut-off wheels can be used for notching, root pass cleaning and even chamfering.



### COMBO ZIP - TYPE 27

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T842	4 1/2" (114.3 mm)	5/64" (1.98 mm)	7/8"	27	A-60-COMBO-ZIP	—	13300	25
WAL-11T852	5" (127 mm)	5/64" (1.98 mm)	7/8"	27	A-60-COMBO-ZIP	—	12200	25
WAL-11T862	6" (152.4 mm)	5/64" (1.98 mm)	7/8"	27	A-60-COMBO-ZIP	—	10200	25

## WALTER Cutting

# ZIP™

These small diameter cut-off wheels are formulated for high performance cutting, notching and grinding. They are made from highly refined ingredients which will not contaminate stainless steel.



### ZIP - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11L303	3" (76.2 mm)	1/32" (0.79 mm)	3/8"	1	A-60-ZIP	—	25470	25
WAL-11L313	3" (76.2 mm)	1/16" (1.57 mm)	3/8"	1	A-24-ZIP	—	25470	25

# ZIP ONE™

This high performance, extra thin 1 mm (1/32") cutoff wheel is designed for precision cutting in thin gauge metal (Smaller than 8 ga or 4mm).



### ZIP ONE - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T542	4 1/2" (114.3 mm)	1/32" (0.79 mm)	7/8"	1	ZA-60-ZIP	—	13300	25
WAL-11T552	5" (127 mm)	1/32" (0.79 mm)	7/8"	1	ZA-60-ZIP	—	12200	25

### ZIP ONE - TYPE 27

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T642	4 1/2" (114.3 mm)	1/32" (0.79 mm)	7/8"	27	ZA-60-ZIP	—	13300	25
WAL-11T652	5" (127 mm)	1/32" (0.79 mm)	7/8"	27	ZA-60-ZIP	—	12200	25

# ZIP+

This new generation of cut-off wheels is specially formulated for the most demanding cutting applications with portable angle grinders. Used daily by metal fabricators, maintenance departments, sheet metal shops, welding shops, mechanical contractors, equipment manufacturers, automotive shops, etc.



### ZIP+ - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T242	4 1/2" (114.3 mm)	1/16" (1.57 mm)	7/8"	1	A-46-ZIP	—	13300	25
WAL-11T252	5" (127 mm)	1/16" (1.57 mm)	7/8"	1	A-46-ZIP	—	12200	25
WAL-11T262	6" (152.4 mm)	1/16" (1.57 mm)	7/8"	1	A-46-ZIP	—	10200	25

### ZIP+ - TYPE 27

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11T453	4 1/2" (114.3 mm)	1/16" (1.57 mm)	7/8"	27	A-46-ZIP	—	13300	25
WAL-11T503	5" (127 mm)	1/16" (1.57 mm)	7/8"	27	A-46-ZIP	—	12200	25
WAL-11T603	6" (152.4 mm)	1/16" (1.57 mm)	7/8"	27	A-46-ZIP	—	10200	25



## WALTER Cutting

# ZIP STAINLESS

These extra thin cut-off wheels (3/64" - 0.045") cut all stainless steels fast, free and cool for burr-free finishes. They are made with highly refined ingredients that will not contaminate stainless steel.



## ZIP STAINLESS - TYPE 27

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11F142	4 1/2" (114.3 mm)	3/64" (1.14 mm)	7/8"	27	A-60-SS-ZIP	—	13300	25
WAL-11F152	5" (127 mm)	3/64" (1.14 mm)	7/8"	27	A-60-SS-ZIP	—	12200	25
WAL-11F162	6" (152.4 mm)	3/64" (1.14 mm)	7/8"	27	A-60-SS-ZIP	—	10200	25

# ZIP ALU

Thin cut-off wheels specially formulated to cut a wide variety of aluminum, aluminum alloys and non-ferrous metals without clogging.



## ZIP ALU - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11U042	4 1/2" (114.3 mm)	3/64" (1.14 mm)	7/8"	1	A-60-ZIP-ALU	—	13300	25
WAL-11U052	5" (127 mm)	3/64" (1.14 mm)	7/8"	1	A-60-ZIP-ALU	—	12200	25
WAL-11U062	6" (152.4 mm)	3/64" (1.14 mm)	7/8"	1	A-60-ZIP-ALU	—	10200	25

# TOUGH CUT™

These thin wheels for angle grinders and circular saws will cut fast and free without binding to minimize the load on the tool and maintain high RPM for a clean cut and best all-around performance.



## TOUGH CUT - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-11R042	4 1/2" (114.3 mm)	3/32" (2.38 mm)	7/8"	1	A-30	—	13300	25
WAL-11R052	5" (127 mm)	3/32" (2.38 mm)	7/8"	1	A-30	—	12200	25
WAL-11R062	6" (152.4 mm)	3/32" (2.38 mm)	7/8"	1	A-30	—	10200	25



## WALTER Cutting

# CHOPCUT

These wheels have been specifically developed for use on portable abrasive chop saws. They put minimum load on the motor and are therefore easy on the operator as well as on the saw.



### CHOPCUT - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-10Q123	12" (304.8 mm)	3/32" (2.38 mm)	1"	1	A-30-HC+	—	5100	10
WAL-10Q143	14" (355.6 mm)	3/32" (2.38 mm)	1"	1	A-30-HC+	—	4400	10
WAL-10Q163	16" (406.4 mm)	7/64" (2.78 mm)	1"	1	A-30-HC+	—	3800	10

# CHOPCUT II

These cut-off wheels are ideal for cutting solids and extrusions with low power chop saws.



### CHOPCUT II - TYPE 1

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-10P123	12" (304.8 mm)	3/32" (2.38 mm)	1"	1	A-30	—	5100	10
WAL-10P143	14" (355.6 mm)	3/32" (2.38 mm)	1"	1	A-30	—	4400	10

## WALTER Grinding

# 1/4" HP™

High performance grinding. Formulated for safety and high performance in a wide range of metal grinding operations. Made from highest quality abrasive grain with greater hardness and wear resistance, they grind welds down fast and with less effort.



### 1/4" HP - TYPE 27S SPIN-ON DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08B450	4 1/2" (114.3 mm)	1/4" (6.35 mm)	5/8" - 11	27S	A-24-HPS	—	13300	20
WAL-08B500	5" (127 mm)	1/4" (6.35 mm)	5/8" - 11	27S	A-24-HPS	—	12200	20

### 1/4" HP - TYPE 27 DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08B460	4 1/2" (114.3 mm)	1/4" (6.35 mm)	7/8"	27	A-24-HPS	—	13300	25
WAL-08B510	5" (127 mm)	1/4" (6.35 mm)	7/8"	27	A-24-HPS	—	12200	25
WAL-08B600	6" (152.4 mm)	1/4" (6.35 mm)	7/8"	27	A-24-HPS	—	10200	25
WAL-08B710	7" (177.8 mm)	1/4" (6.35 mm)	7/8"	27	A-24-HPS	—	8600	25
WAL-08B910	9" (228.6 mm)	1/4" (6.35 mm)	7/8"	27	A-24-HPS	—	6600	25

# 1/8" HP COMBO™

These 1/8" wheels are rapidly setting new standards of performance in a combined depressed center wheel for portable angle grinders. Whether cutting, grooving, notching or light grinding, these wheels are guaranteed to give you longest wheel life, fastest material removal and maximum safety.



### 1/8" HP COMBO - TYPE 27S HIGH PERFORMANCE CUTTING AND GRINDING

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08B452	4 1/2" (114.3 mm)	1/8" (3.18 mm)	5/8 po - 11	27S	A-30-COMBO	—	13300	25
WAL-08B502	5" (127 mm)	1/8" (3.18 mm)	5/8 po - 11	27S	A-30-COMBO	—	12200	25

### 1/8" HP COMBO - TYPE 27 HIGH PERFORMANCE CUTTING AND GRINDING

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08B462	4 1/2" (114.3 mm)	1/8" (3.18 mm)	7/8 po	27	A-30-COMBO	—	13300	25
WAL-08B512	5" (127 mm)	1/8" (3.18 mm)	7/8 po	27	A-30-COMBO	—	12200	25
WAL-08B602	6" (152.4 mm)	1/8" (3.18 mm)	7/8 po	27	A-30-COMBO	—	10200	25
WAL-08B712	7" (177.8 mm)	1/8" (3.18 mm)	7/8 po	27	A-30-COMBO	—	8600	25
WAL-08B912	9" (228.6 mm)	1/8" (3.18 mm)	7/8 po	27	A-30-COMBO	—	6600	25

## WALTER Grinding

# HP XX™

Use Double-X to achieve the highest productivity in all heavy duty grinding applications. When all costs are considered, Double-X will be the wheel that grinds at the lowest cost.



### 1/4" HP XX SPIN-ON - TYPE 27S

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08K500	5" (127 mm)	1/4" (6.35 mm)	5/8" - 11	27S	A-20-X	—	12200	20

### 1/4" HP XX - TYPE 27

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08K510	5" (127 mm)	1/4" (6.35 mm)	7/8"	27	A-20-X	—	12200	25
WAL-08K600	6" (152.4 mm)	1/4" (6.35 mm)	7/8"	27	A-16-X	—	10200	25
WAL-08K700	7" (177.8 mm)	1/4" (6.35 mm)	7/8"	27	A-16-X	—	8600	25
WAL-08K900	9" (228.6 mm)	1/4" (6.35 mm)	7/8"	27	A-16-X	—	6600	25

### 1/4" HP XX - TYPE 28

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08K701	7" (177.8 mm)	1/4" (6.35 mm)	7/8"	28	A-16-X	—	6600	25

# XCAVATOR



### 1/4" TYPE 27

ULTRA-HIGH REMOVAL GRINDING

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08P450	4 1/2" (111.3 mm)	1/4" (6.35 mm)	5/8"-11	27	A-16-P	—	13300	20
WAL-08P460	4 1/2" (111.3 mm)	1/4" (6.35 mm)	7/8"	27	A-16-P	—	13300	25
WAL-08P500	5" (127 mm)	1/4" (6.35 mm)	5/8"-11	27	A-16-P	—	12200	20
WAL-08P510	5" (127 mm)	1/4" (6.35 mm)	7/8"	27	A-16-P	—	12200	25
WAL-08P600	6" (152.4 mm)	1/4" (6.35 mm)	7/8"	27	A-16-P	—	10200	25
WAL-08P700	7" (177.8 mm)	1/4" (6.35 mm)	7/8"	27	A-16-P	—	8600	25
WAL-08P900	9" (228.6 mm)	1/4" (6.35 mm)	7/8"	27	A-16-X	—	6600	25

## WALTER Grinding

# 1/8" ALLSTEEL™

These grinding wheels are designed to deliver top performance when working on both steel and stainless steel. They incorporate the latest developments in grain and bonding technology to lower your grinding costs. Operator safety and comfort, fast removal rates and outstanding life are key features that will let you do more work in less time - guaranteed !



### 1/8" ALLSTEEL - TYPE 27

DEPRESSED CENTER CUTTING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08C452	4 1/2" (114.3 mm)	1/8" (3.18 mm)	7/8"	27	A-30-AS	—	13,300	25
WAL-08C502	5" (127 mm)	1/8" (3.18 mm)	7/8"	27	A-30-AS	—	12,200	25
WAL-08C602	6" (152.4 mm)	1/8" (3.18 mm)	7/8"	27	A-30-AS	—	10,200	25

# 1/4" ALLSTEEL™

These grinding wheels are designed to deliver top performance when working on both steel and stainless steel. They incorporate the latest developments in grain and bonding technology to lower your grinding costs.



### 1/4" ALLSTEEL - TYPE 27

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08C450	4 1/2" (114.3 mm)	1/4" (6.35 mm)	7/8"	27	A-24-AS	—	13,300	25
WAL-08C500	5" (127 mm)	1/4" (6.35 mm)	7/8"	27	A-24-AS	—	12,200	25
WAL-08C600	6" (152.4 mm)	1/4" (6.35 mm)	7/8"	27	A-24-AS	—	10,200	25

# ALLSTEEL XX™

These wheels will not only get the job done faster and last longer but they are also easier to control.



### 1/4" ALLSTEEL XX - TYPE 27

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08H500	5" (127 mm)	1/4" (6.35 mm)	7/8"	27	A-24-ASXX	—	12,200	25

## WALTER Grinding

# PIPEFITTER™

These wheels are specially formulated and reinforced for grinding joint welds between passes in pipeline construction and pipe fabrication. They do not contain iron, sulfur or chlorine (Fe, S, Cl) and will not contaminate stainless steel.



### PIPEFITTER 3/32" - TYPE 27

DEPRESSED CENTER CUTTING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08N453	4 1/2" (114.3 mm)	3/32" (2.38 mm)	7/8"	27	A-36-PIPE	—	13,300	25
WAL-08N503	5" (127 mm)	3/32" (2.38 mm)	7/8"	27	A-36-PIPE	—	12,200	25
WAL-08N603	6" (152.4 mm)	3/32" (2.38 mm)	7/8"	27	A-36-PIPE	—	10,200	25

### PIPEFITTER 1/8" - TYPE 27

DEPRESSED CENTER CUTTING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08N502	5" (127 mm)	1/8" (3.18 mm)	7/8"	27	A-36-PIPE	—	12,200	25
WAL-08N602	6" (152.4 mm)	1/8" (3.18 mm)	7/8"	27	A-24-PIPE	—	10,200	25

### PIPEFITTER 5/32" - TYPE 27

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08N604	6" (152.4 mm)	5/32" (3.99 mm)	7/8"	27	A-20-PIPE	—	10,200	25

# ALU™

These wheels grind all types of aluminum and non-ferrous metals smoothly and at removal rates never thought possible. The specially impregnated bonding of these wheels resists loading even when grinding very soft, pure aluminum.



### 1/4" ALU - TYPE 27

DEPRESSED CENTER GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-08L450	4 1/2" (114.3 mm)	1/4" (6.35 mm)	7/8"	27	A-24-ALU	—	13,300	25
WAL-08L500	5" (127 mm)	1/4" (6.35 mm)	7/8"	27	A-24-ALU	—	12,200	25
WAL-08L600	6" (152.4 mm)	1/4" (6.35 mm)	7/8"	27	A-24-ALU	—	10,200	25
WAL-08L700	7" (177.8 mm)	1/4" (6.35 mm)	7/8"	27	A-24-ALU	—	8,600	25



## WALTER Grinding

# HP CUP WHEELS™

Walter cup wheels are widely used for rough grinding or snagging work on concrete or steel. Supplied with deeply anchored wrap-around steel hub for maximum safety and long life. 5/8"-11 threaded arbor for spin-on mounting.



### HP CUP WHEELS - TYPE 11

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-12A005	5" (127 mm)	—	7/8"	11	—	—	8,600	1
WAL-12A006	6" (152.4 mm)	—	7/8"	11	—	—	6,800	1

# PLUGS & CONES

Very popular in foundries, steel mills and fabricating shops for heavy stock removal in hard to reach areas. All have an internal threaded arbor for direct mounting.



### CONES

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-12C121	2" (50.8 mm)	3" (76.2 mm)	7/8"	16	—	—	18,100	1

### PLUGS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-12C321	2" (50.8 mm)	3" (76.2 mm)	7/8"	18	—	—	18,100	1
WAL-12C211	2" (50.8 mm)	3" (76.2 mm)	7/8"	18R	—	—	18,100	1

# MOUNTED POINTS PINK

These points are made from the finest grades of abrasive grain. Their shafts are precisely centered and every point is dressed for perfect balance without run-out or vibration. 1/4" shaft.



ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-12D001	3/4" (19.05 mm)	2 1/2" (63.5 mm)	7/8"	A-1	—	—	19,800	1
WAL-12D011	1" (25.4 mm)	2 3/4" (69.85 mm)	7/8"	A-3	—	—	16,100	1

## WALTER Grinding

# ENDURO-FLEX™ SPIN-ON

Today's Enduro-Flex one-step finishing discs not only meet but surpass the challenges that the metal fabricating and finishing industry faces daily. A new, ultra sharp and refined zirconium grain stays sharper longer to remove more material faster. A special top coat continuously cools and lubricates the disc for smooth, vibration-free grinding and sanding from start to finish.



## ENDURO-FLEX - SPIN-ON FLAP DISCS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-06B454	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	40	13,300	10
WAL-06B456	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	60	13,300	10
WAL-06B458	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	80	13,300	10
WAL-06B462	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	120	13,300	10
WAL-06B504	5" (127 mm)	—	5/8" - 11	—	—	40	12,200	10
WAL-06B506	5" (127 mm)	—	5/8" - 11	—	—	60	12,200	10
WAL-06B508	5" (127 mm)	—	5/8" - 11	—	—	80	12,200	10
WAL-06B512	5" (127 mm)	—	5/8" - 11	—	—	120	12,200	10
WAL-06B604	6" (152.4 mm)	—	5/8" - 11	—	—	40	10,200	10
WAL-06B606	6" (152.4 mm)	—	5/8" - 11	—	—	60	10,200	10
WAL-06B608	6" (152.4 mm)	—	5/8" - 11	—	—	80	10,200	10
WAL-06B612	6" (152.4 mm)	—	5/8" - 11	—	—	120	10,200	10

# ENDURO-FLEX™

No need to discard the disc when the flap overhang is worn down to the backing. The Enduro-Flex flap disc can be restored to like-new performance by reducing the diameter of the Eazy-Trim backing.

## ENDURO-FLEX FLAP DISCS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-15R454	4 1/2" (114.3 mm)	—	7/8"	—	—	40	13,300	10
WAL-15R456	4 1/2" (114.3 mm)	—	7/8"	—	—	60	13,300	10
WAL-15R458	4 1/2" (114.3 mm)	—	7/8"	—	—	80	13,300	10
WAL-15R462	4 1/2" (114.3 mm)	—	7/8"	—	—	120	13,300	10
WAL-15R504	5" (127 mm)	—	7/8"	—	—	40	12,200	10
WAL-15R506	5" (127 mm)	—	7/8"	—	—	60	12,200	10
WAL-15R508	5" (127 mm)	—	7/8"	—	—	80	12,200	10
WAL-15R512	5" (127 mm)	—	7/8"	—	—	120	12,200	10
WAL-15R704	7" (177.8 mm)	—	7/8"	—	—	40	8,600	10
WAL-15R706	7" (177.8 mm)	—	7/8"	—	—	60	8,600	10
WAL-15R708	7" (177.8 mm)	—	7/8"	—	—	80	8,600	10

## WALTER Blending

# ENDURO-FLEX™ STAINLESS - SPIN-ON

Made from natural and sustainable plant fibers the Eco-Trim backing can easily be trimmed for higher productivity, maximum operator safety and comfort as well as protecting our environment.



## ENDUROFLEX STAINLESS - SPIN-ON

FLAP DISCS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-06F454	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	40	13300	10
WAL-06F456	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	60	13300	10
WAL-06F458	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	80	13300	10
WAL-06F504	5" (127 mm)	—	5/8" - 11	—	—	40	12200	10
WAL-06F506	5" (127 mm)	—	5/8" - 11	—	—	60	12200	10
WAL-06F508	5" (127 mm)	—	5/8" - 11	—	—	80	12200	10
WAL-06F512	5" (127 mm)	—	5/8" - 11	—	—	120	12200	10

# ENDURO-FLEX TURBO™

## Removes faster! Better finish!

What does ENDURO FLEX Turbo provide? The fastest weld removal and edge breaking. With 60% more removal than before, ENDURO-FLEX Turbo demonstrates extremely fast removal thanks to a unique mixture of high content self-sharpening grains.



## ENDURO-FLEX TURBO

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-06A452	4 1/2" (114.3 mm)	—	5/8" - 11	—	36/60	—	13300	10
WAL-06A502	5" (127 mm)	—	5/8" - 11	—	36/60	—	12000	10

## WALTER Blending

# ENDURO-FLEX™ 2-IN-1

Enduro-Flex 2 in 1 flap discs will remove TIG welds and finish the surface in just one step, substantially reducing your finishing costs. Changing from a sanding disc to a non-woven disc will be a thing of the past for weld blending and surface finishing.



## ENDURO-FLEX 2-IN-1

SURFACE FINISHING DISCS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-15I503	5" (127 mm)	—	5/8" - 11	—	—	—	12200	10
WAL-15I453	4 1/2" (114.3 mm)	—	5/8" - 11	—	—	—	13300	10

# SPIN-ON

Flexcut the leading flexible grinding wheel for over 25 years is especially formulated to deliver superior performance on all ferrous and non-ferrous metals.



## FLEXCUT - SPIN-ON

FLEXIBLE GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-15L503	5" (127 mm)	—	5/8" - 11	—	—	A-36-X-FLEX	12200	25
WAL-15L506	5" (127 mm)	—	5/8" - 11	—	—	A-60-X-FLEX	12200	25
WAL-15L603	6" (152.4 mm)	—	5/8" - 11	—	—	A-36-X-FLEX	10200	25

# FLEXCUT™

Flexcut the leading flexible grinding wheel for over 25 years is especially formulated to deliver superior performance on all ferrous and non-ferrous metals.

## FLEXCUT - SPIN-ON

FLEXIBLE GRINDING WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-15L513	5" (127 mm)	—	7/8"	—	—	A-36-X-FLEX	12200	25
WAL-15L703	7" (177.8 mm)	—	7/8"	—	—	A-36-X-FLEX	8600	25

## WALTER Brushing

# WIRE CUP BRUSHES

These wire cup brushes are designed for high performance flat surface brushing of large surfaces. They are made from top quality oil hardened and tempered wire that is precisely positioned for perfect balance and longest brush life. Improved construction ensures maximum operator safety and fast brushing action. All cup brushes are equipped with threaded arbors for quick and easy mounting.



## CRIMPED - STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	WIRE	MAX. RPM	STD PKG
WAL-13D304	3" (76.2 mm)	—	5/8" - 11	—	—	.0118"	12,000	1

## CRIMPED - STAINLESS STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	WIRE	MAX. RPM	STD PKG
WAL-13D314	3" (76.2 mm)	—	5/8" - 11	—	—	.0118"	12,000	1

## KNOT-TWISTED - STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	WIRE	MAX. RPM	STD PKG
WAL-13F304	3" (76.2 mm)	—	5/8" - 11	—	—	.015"	12,000	1

## KNOT-TWISTED - STAINLESS STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	WIRE	MAX. RPM	STD PKG
WAL-13F314	3" (76.2 mm)	—	5/8" - 11	—	—	.015"	12,000	1

## KNOT-TWISTED WITH RING - STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	WIRE	MAX. RPM	STD PKG
WAL-13G304	3" (76.2 mm)	—	5/8" - 11	—	—	.020"	12,000	1
WAL-13G504	5" (127 mm)	—	5/8" - 11	—	—	.020"	8,600	1
WAL-13G554	5" (127 mm)	—	5/8" - 11	—	—	.035"	8,600	1

## KNOT-TWISTED WITH RING - STAINLESS STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	WIRE	MAX. RPM	STD PKG
WAL-13G314	3" (76.2 mm)	—	5/8" - 11	—	—	.020"	12,000	1
WAL-13G514	5" (127 mm)	—	5/8" - 11	—	—	.020"	8,600	1



## WALTER Brushing

# SAUCER-CUP BRUSHES

These brushes combine the advantages of both wire cup and wire wheel brushes. They feature a unique saucer cup shape (built-in working angle of 45°) which allows them to work in hard to reach areas such as inside corners, edges and contours.



### KNOT-TWISTED - STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-13H404	4" (101.6 mm)	—	5/8" - 11	—	—	—	20,000	1
WAL-13H504	5" (127 mm)	—	5/8" - 11	—	—	—	15,000	1

### KNOT-TWISTED - STAINLESS STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-13H414	4" (101.6 mm)	—	5/8" - 11	—	—	—	20,000	1
WAL-13H514	5" (127 mm)	—	5/8" - 11	—	—	—	15,000	1

# WIRE WHEEL BRUSHES

They are made from top quality wire that is tightly knotted and each tuft is precisely positioned and set for perfect balance and vibration-free operation. Improved construction ensures maximum operator safety and fast material removal.



### STRINGER BEAD - STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-13K454	4 1/2" (114.3 mm)	3/16" (4.76 mm)	5/8" - 11	—	—	—	15000	1
WAL-13K504	5" (127 mm)	1/4" (6.35 mm)	5/8" - 11	—	—	—	15000	1
WAL-13K604	6" (152.4 mm)	1/4" (6.35 mm)	5/8" - 11	—	—	—	10000	1

### STRINGER BEAD - STAINLESS STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-13K464	4 1/2" (114.3 mm)	3/16" (4.76 mm)	5/8" - 11	—	—	—	15000	1
WAL-13K514	5" (127 mm)	1/4" (6.35 mm)	5/8" - 11	—	—	—	15000	1

### KNOT-TWISTED - STEEL

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-13L454	4 1/2" (114.3 mm)	3/8" (9.53 mm)	1 5/8" - 11	—	—	—	15000	1
WAL-13L504	5" (127 mm)	3/8" (9.53 mm)	5/8" - 11	—	—	—	15000	1
WAL-13L604	6" (152.4 mm)	3/8" (9.53 mm)	5/8" - 11	—	—	—	10000	1

### KNOT-TWISTED - STAINLESS STEEL







ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-13L464	4 1/2" (114.3 mm)	3/8" (9.53 mm)	5/8" - 11	—	—	—	15000	1
WAL-13L514	5" (127 mm)	3/8" (9.53 mm)	5/8" - 11	—	—	—	15000	1
WAL-13L614	6" (152.4 mm)	3/8" (9.53 mm)	5/8" - 11	—	—	—	10000	1

WALTER Tooling

# CARBIDE BURRS

These new carbide burrs are made from highest grade tungsten carbide and are manufactured with the highest degree of accuracy for perfect concentricity and balance. They offer fast material removal and longest life.



ARTICLE NUMBER	DIA.	TYPE	STD PKG	STD CTN
 <b>WAL-01V004</b>	1/2" x 1" (12.7 mm x 25.4 mm)	Cylindrical (SA)	1	10
 <b>WAL-01V007</b>	1/2" x 1" (12.7 mm x 25.4 mm)	Cylindrical round nose (SC)	1	10
 <b>WAL-01V013</b>	1/2" x 1" (12.7 mm x 25.4 mm)	Tapered (SG)	1	10
 <b>WAL-01V015</b>	1/2" x 1" (12.7 mm x 25.4 mm)	Tree (SF)	1	10
 <b>WAL-01V018</b>	1/2" x 7/8" (12.7 mm x 22.23 mm)	Conical (SM)	1	10
 <b>WAL-01V032</b>	1/2" x 1 1/8" (12.7 mm x 28.58 mm)	Cone (SL)	1	10

# CARBIDE BURR PRODUCTION SET

Contains of each of the following:  
WAL-01V002 (1), WAL-01V006 (1), WAL-01V011 (1),  
WAL-01V015 (1) et WALV018 (1)



ABRASIVES

# ANGLE GRINDERS

## BIG 6 - 6"

### FEATURES

- + DYNAMAX speed, stays constant under load
- + Exclusive QUICK RELEASE feature - for tool-free wheel change
- + Exclusive safety clutch and adjustable guard
- + Improved DUSTGUARD
- + New anti-vibration handle



ITEM NUMBER	APPLICATION	DISC DIA.	RPM	ENGINE	AMPS	WEIGHT
						LB
WAL-30A260	Cleaning rust and scale, Cutting, Notching, Brushing, Heavy weld grinding, Blending	6" (152.4 mm)	9000	120V A.C. only	12.2	4.4 lbs

## SUPER 5 - 5"

### FEATURES

- + Exclusive QUICK RELEASE feature for tool-free wheel change
- + Exclusive safety clutch and adjustable guard
- + Improved DUSTGUARD
- + New anti-vibration handle
- + Powerful medium size grinder



ITEM NUMBER	APPLICATION	DISC DIA.	RPM	ENGINE	AMPS	WEIGHT
						LB
WAL-30A150	Cleaning rust and scale, Cutting, Notching, Weld grinding, Blending, Finishing	5" (127 mm)	10000	120V A.C./D.C.	9.6	4.2 lbs

## MINI-GRINDER - 4 1/2"

### FEATURES

- + Exclusive QUICK RELEASE feature for tool-free wheel change
- + Exclusive safety clutch and adjustable guard
- + Improved DUSTGUARD
- + Light and powerful on hand grinder
- + New anti-vibration handle



ITEM NUMBER	APPLICATION	COLLET DIA.	RPM	ENGINE	AMPS	WEIGHT
						LB
WAL-30A161	Cleaning rust and scale, Cutting, Notching, Weld grinding, Blending, Finishing	4 1/2" (114.3 mm)	10000	120V A.C./D.C.	8	4 lbs

## WALTER Power Tools

# MAXI-GRINDER - 7"

## FEATURES

- + New ergonomic design with rotating rear handle
- + Tool-free adjustable guard and spindle lock
- + More powerful motor, improved DUSTGUARD protection
- + Carbon brush service door
- + Lower profile gear housing



ITEM NUMBER	APPLICATION	DISC DIA.	RPM	ENGINE	WATTS	WEIGHT
						LB
<b>WAL-30A170</b>	Cleaning rust and scale, Cutting, Notching, Weld grinding, Blending, Finishing	7" (177.8 mm)	8500	120V A.C.	2400	12.8 lbs

# POINT GRINDER

## DIALSPEED - 6141

## FEATURES

- + DIALSPEED electronic speed control
- + DYNAMAX for maintaining selected speed constant
- + New slim line housing for highest comfort
- + Exclusive spindle lock
- + More powerful, high torque motor

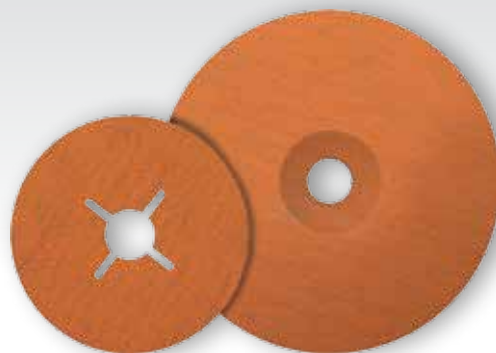


ITEM NUMBER	APPLICATION	COLLET DIA.	RPM	ENGINE	AMPS	WEIGHT
						LB
<b>WAL-30A141</b>	Fitting, Deburring, Finishing, Grinding, Cutting, Brushing, Working of small parts and precision work	1/4" (6.35 mm)	10,000-30,500	120V A.C.	6.4	4.2 lbs

## WALTER Sanding

# COOLCUT™ XX

An exclusive high tech blend of abrasive grains, bond and cooling agents is incorporated in these new discs, allowing you to blend and finish more pieces and establish new levels of productivity.



## COOLCUT XX

SANDING DISCS WITH CYCLONETM

ITEM NUMBER	DIA.	WIDHT	ARBOR	GRIT	MAX. RPM	MIN. PKG
WAL-15X503	5" (127 mm)	—	7/8"	36	—	25

# COOLCUT™

These sanding discs are excellent for general purpose sanding, light weld removal, surface cleaning, etc.



## COOLCUT

GENERAL PURPOSE SANDING DISCS

ITEM NUMBER	DIA.	WIDHT	ARBOR	GRIT	MAX. RPM	MIN. PKG
WAL-15C502	5" (127 mm)	—	7/8"	24	—	25
WAL-15C503	5" (127 mm)	—	7/8"	36	—	25
WAL-15C504	5" (127 mm)	—	7/8"	40	—	25

# BACKING PAD ASSEMBLIES

High quality impact resistant plastic with excellent heat dissipation for longest life.



## BACKING PAD ASSEMBLIES

ITEM NUMBER	DIA.	WIDHT	THREAD	GRIT	MAX. RPM	STD PKG
WAL-15D044	4 1/2" (114.3 mm)	—	5/8" - 11	—	13300	1
WAL-15D054	5" (127 mm)	—	5/8" - 11	—	12200	1



## WALTER Sanding

# COOLCUT™ FLAP WHEELS

These flap wheels are made of the highest industrial quality abrasive cloth and have an optimal number of flaps that are securely bonded and balanced around the hub for highest quality finishing. They are ideal for general purpose blending, shaping and deburring and will give a consistent and uniform grained satin finish in no time.



## COOLCUT XX 1/4" SHAFT

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-15F156	1" (25.4 mm)	1" (25.4 mm)	1/4"	—	—	60	30000	10
WAL-15F158	1" (25.4 mm)	1" (25.4 mm)	1/4"	—	—	80	30000	10
WAL-15F106	1 1/2" (38.1 mm)	1" (25.4 mm)	1/4"	—	—	60	25000	10
WAL-15F108	1 1/2" (38.1 mm)	1" (25.4 mm)	1/4"	—	—	80	25000	10
WAL-15F306	2" (50.8 mm)	1" (25.4 mm)	1/4"	—	—	60	25000	10
WAL-15F308	2" (50.8 mm)	1" (25.4 mm)	1/4"	—	—	80	25000	10

# FX CLEANING ABRASIVES

FX abrasives are made of high density, non-woven, synthetic webbing impregnated with abrasive grain. They are most effective for removing paint, coatings, burn marks, rust, scale, gaskets and similar applications. Can replace wire brushes in many applications.



## FX CLEANING ABRASIVES - CUP DISCS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-07X450	4 1/2" (114.3 mm)	3/4" (19.05 mm)	5/8" - 11	—	—	—	10500	5
WAL-07X505	5" (127 mm)	3/4" (19.05 mm)	5/8" - 11	—	—	—	10500	5

## FX CLEANING ABRASIVES - MOUNTED WHEELS

ITEM NUMBER	DIA.	WIDHT	ARBOR	TYPE	GRADE	GRIT	MAX. RPM	STD PKG
WAL-07X120	2" (50.8 mm)	1" (25.4 mm)	1/4"	—	—	—	11000	1

## WALTER Sanding

## QUICK-STEP BACKING PADS

This patented backing pad is the heart of the Quick-Step system. It is made of industrial strength nylon that is guaranteed to retain its strength and flexibility even at elevated temperatures. Disc changes take only seconds.



ITEM NUMBER	DESCRIPTION
WAL-07Q049	For 4 1/2" discs, 4 1/2" pad

## QUICK-STEP BLENDEX SURFACE CONDITIONING DISCS

**COARSE:** For removing scratches.

**MEDIUM:** For cleaning and eliminating superficial scratches.

**FINE:** For fine striated finishes.

**SUPER FINE:** Last step before decorative or polishing finishes.



ITEM NUMBER	DIA.	GRIT	MAX. RPM	OPTIMAL RPM	STD PKG	STD CTN
WAL-07R452	4 1/2" (114.3 mm)	COARSE, tan	11000	4,000 to 6,500	10	100
WAL-07R453	4 1/2" (114.3 mm)	MEDIUM, maroon	11000	4,000 to 6,500	10	100
WAL-07R454	4 1/2" (114.3 mm)	FINE, blue	11000	4,000 to 6,500	10	100

## TWIST TOPCUT SANDING DISCS

Unique construction for optimal heat dissipation and wear resistance.



ABRASIVES

ITEM NUMBER	DIA.	GRIT	COLOR	MAX. RPM	OPTIMAL RPM	STD PKG	STD CTN
WAL-04D206	2" (50.8 mm)	60	Blue	30000	15000	50	2000

# SUPPLIERS

## Air Liquide - Product Catalogue

### SAFETY



3m.com/intl/ca



sellstrom.com



northsafety.com



ago1.com

### EQUIPMENTS



millerwelds.com



esab.com



mylincolnelectric.com



hypertherm.com



victortechnologies.com  
thermaldynamics



victortechnologies.com  
thermalarc



nederman.com



AUTOMATECH Robotik

m-automatech.com



mathey.com

### FILLER METALS



hobartwelders.com



select-arc.com

Bohler Thyssen, voestalpine voestalpine.com

### ABRASIVES



walter.com



unitedabrasives.com

### WELDING MATERIAL



victortechnologies.com



harrisproductsgroup.com



bernardwelds.com



tregaskiss.com



binzel-abicor.com



weldcraft.com



concoa.com



stronghandtools.com



gullco.com



westernenterprises.com

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