

HARRIS®

GAS APPARATUS & BRAZING ALLOYS

HARRIS UK CATALOGUE



The Harris Products Group is a world leader in metal working products used in the brazing, soldering, welding, cutting and gas distribution industries. The company was formed in 2006 with the merger of both Harris Calorific, Inc., a manufacturer of gas welding & cutting equipment, gas regulation & distribution systems and J.W. Harris Co., a manufacturer of brazing and soldering alloys.



The Harris Products Group currently operates manufacturing facilities in Mason, Ohio, USA; Gainesville, Georgia, USA, Dzierzonow, Poland, and Sao Paulo, Brazil. Each is ISO 9001 certified for quality management systems.

Demonstrating a commitment to stewardship of the global environment, these facilities are also ISO 14001 certified for environmental management systems.

With a history that includes the invention of flame-cutting torches and more than 100 years of manufacturing excellence, The Harris Products Group has a firm foundation in the equipment and alloys used in brazing, soldering, welding, cutting, heating and gas control.

Beginning in 1899, John Harris discovered the oxy-acetylene method of cutting while conducting research on the manufacture of synthetic rubies. While working on the materials, he accidentally cut the metal plate beneath the synthetic ruby, discovering the world's first flame-cutting torch.

He exhibited the torch at the 1904 St. Louis World's Fair and started Harris Calorific in 1905. Harris continued to refine its gas torches and started manufacturing related accessories, including gas pressure regulators. In 1926, the company was purchased by the U.S. Welding Co., and it became a part of Emerson Electric Co. in 1973.

Meanwhile, in 1914, Joseph W. Harris founded the J.W. Harris Company, specializing in the distribution and repair of specialized parts for automotive and farm vehicles. The company



later expanded into welding alloys and accessories. In 1984, the company purchased Unibrazo Corp., another welding and brazing filler metals company, and they continued their expansion with the acquisition of Thermacote Welco Co. in 1993. Autobrazo, a manufacturer of precision brazing rings and return bends, was acquired in 2005.

Recognizing the complementary product offerings that both Harris Calorific and J.W. Harris had to offer, Lincoln Electric acquired both companies. In 1990, Lincoln Electric purchased Harris Calorific from Emerson Electric. And in 2005, the global company purchased the privately-held J.W. Harris. With headquarters in Cleveland, Ohio, Lincoln Electric has manufacturing operations, joint ventures and alliances in 18 countries and a worldwide network of distributors and sales offices covering more than 160 countries.

The companies were officially combined on May, 2006, creating the Harris Products Group. Since that formation, additional companies offering complementary products have joined the group.

In 2008, Lincoln Electric also acquired Brastak. Based in Sao Paulo, Brazil this company is an industry leader in brazing alloys, soldering and welding products. This company was also folded into the Harris Products Group, further expanding the company's diverse product offerings.

The combined company offers excellence in the manufacture of:

- ▶ **Gas welding and cutting equipment**
- ▶ **Industrial and specialty gas regulation equipment**
- ▶ **Gas distribution systems**
- ▶ **Brazing and soldering alloys**
- ▶ **Pre-formed bends, rings and return bends**



Mason (OH), USA



Gainesville (GA), USA



Dzierzoniow, Poland

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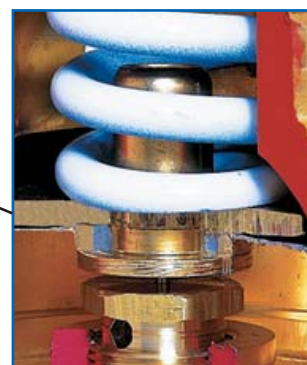
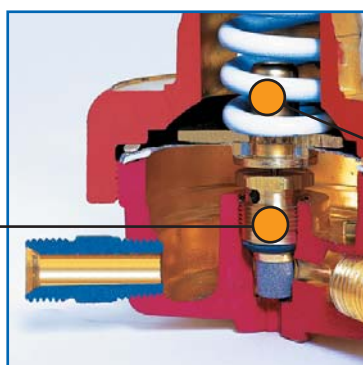
Regulators

General features:

- ▶ Harris regulators are designed and manufactured according to the most recent international standards:
 - EN ISO 2503 FOR CYLINDER PRESSURE & FLOW REGULATORS
 - PRESSURE GAUGES CONFORM TO EN ISO 5171
- ▶ High pressure capsule seat with PTFE (Teflon) sealing surface
- ▶ Compressed gas regulators D version have tamperproof self reseating internal safety relief valve (IRV)
- ▶ All regulators supplied with inlet and outlet to suit country



One piece encapsulated seat with internal filter



Tamper proof, self reseating internal safety relief valve IRV

Single Stage Regulators

Model 818B Single stage gaugeless regulator

Applications:

- ▶ Medium duty cutting, heating and welding
- ▶ Designed for all industrial applications in the toughest working conditions

Features:

- ▶ Maximum inlet pressure of 230 bar
- ▶ Enough flow to cut up to 300 mm. steel
- ▶ Delivery pressure set by turning the knob on the calibrated bonnet



UK PART N°	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)
H1282	Acetylene	25	0 - 1.5	30
H1283	Oxygen	230	0 - 10	155
H1284	Propane	25	0 - 4	16.5

Model 918

Single stage gaugeless regulator

Applications:

- ▶ Medium duty cutting, heating and welding
- ▶ Designed for all industrial applications in the toughest working conditions

Features:

- ▶ Maximum inlet pressure of 300 bar
- ▶ Enough flow to cut up to 300 mm. steel
- ▶ High pressure capsule seat with Kel-F (CTFE) sealing surface
- ▶ Delivery pressure set by turning the knob on the calibrated bonnet
- ▶ Durable chrome bonnet
- ▶ Bull nose "O" ring



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)
H1001	Acetylene	25	0 - 1.5	30
H1002	Oxygen	300	0 - 10	155
H1003	Propane	25	0 - 4	16.5

Model 801B

Single stage two gauge regulator

Applications:

- ▶ Medium duty cutting, heating and welding

Features:

- ▶ Maximum inlet pressure of 230 bar
- ▶ Enough flow to cut up to 300 mm. steel
- ▶ Smooth adjustment, with high precision
- ▶ Side inlet connection available



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1103	Acetylene	25	0 - 1.5	30	0 - 2.5	0 - 40
H1109	Oxygen	230	0 - 4	100	0 - 6	0 - 315
H1384	Propane	25	0 - 4	16.5	0 - 6	0 - 40
H1104	Oxygen	230	0 - 10	155	0 - 16	0 - 315
H1115*	Acetylene	25	0 - 1.5	30	0 - 2.5	0 - 40
H1116*	Oxygen	230	0 - 4	100	0 - 6	0 - 315

* Side entry inlet connection.

Model 90I Single stage two gauge regulator

Applications:

- ▶ Medium duty cutting, heating and welding

Features:

- ▶ Maximum inlet pressure of 300 bar
- ▶ Enough flow to cut up to 300 mm. steel
- ▶ High pressure capsulate seat with Kel-F (CTFE) sealing surface
- ▶ Smooth adjustment, with high precision
- ▶ Durable chrome bonnet
- ▶ Bull nose "O" ring



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1011	Acetylene	25	0 - 1.5	30	0 - 2.5	0 - 40
H1012	Oxygen	300	0 - 4	105	0 - 6	0 - 400
H1013	Oxygen	300	0 - 10	175	0 - 16	0 - 400
H1015	Inert Gas	300	0 - 10	175	0 - 16	0 - 400

Model 825/925 Single stage two gauge regulator

Applications:

- ▶ Heavy duty cutting, heating and welding

Features:

- ▶ Forged brass body for maximum strength
- ▶ Maximum inlet pressure of 300 bar
- ▶ Enough flow to cut up to 400 mm. steel
- ▶ High pressure capsulate seat with Kel-F (CTFE) sealing surface
- ▶ Large Ø 70 mm diaphragm stabilizes working pressure
- ▶ Stainless steel diaphragm on 25, 40 & 50 bar versions
- ▶ Side entry inlet connection available



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1031	Acetylene	25	0 - 1.5	52	0 - 2.5	0 - 40
H1032	Oxygen	300	0 - 4	115	0 - 6	0 - 400
H1033	Oxygen	300	0 - 10	185	0 - 16	0 - 400
H1037	Oxygen	300	0 - 15	325	0 - 25	0 - 400
H1034	Inert Gas	300	0 - 10	185	0 - 16	0 - 400
H1038	Inert Gas	300	0 - 15	325	0 - 25	0 - 400
H1370	Inert Gas	300	0 - 25	400	0 - 40	0 - 400
H1087	Oxygen	300	0 - 40	500	0 - 60	0 - 400
H1088	Inert Gas	300	0 - 40	500	0 - 60	0 - 400
H1090	CO ₂	300	0 - 40	500	0 - 60	0 - 400
H1371	Inert Gas	300	0 - 50	600	0 - 100	0 - 400
H1374*	Inert Gas	300	0 - 50	600	0 - 100	0 - 400
H1031**	Acetylene	25	0 - 1.5	52	0 - 2.5	0 - 40
H1032**	Oxygen	300	0 - 4	115	0 - 6	0 - 400

* Fitted with "Flair Nipple" outlet. - ** Side entry inlet connection.

Shielding gas regulators

Model 80IB/90I

Single stage two gauge shielding gas regulators

Applications:

- ▶ Suitable for MIG/TIG welding

Features:

- ▶ Forged brass body for strength
- ▶ Maximum inlet pressure of 230 or 300 bar
- ▶ Delivery gauge calibrated in (Lpm)



UK PART No	GAS	MAX INLET PRESSURE (bar)	FLOW (Lpm)	SUPPLY PRESSURE GAUGE (bar)	FLOWGAUGE (Lpm)
H1106	Argon	230	0 - 15	0 - 315	0 - 15
H1105	Argon	230	0 - 30	0 - 315	0 - 30
H1117*	Argon	230	0 - 30	0 - 315	0 - 30
H1270**	Argon	300	0 - 50	0 - 400	0 - 50

* Side entry inlet connection.

** Regulator supplied with a NEVOC cylinder connection.

Model 814B

Single stage one gauge shielding gas regulators

Applications:

- ▶ Suitable for MIG/TIG welding

Features:

- ▶ Forged brass body for strength
- ▶ Maximum inlet pressure of 230 bar
- ▶ Delivery flow (H1148) set by turning the knob on the calibrated bonnet



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE/ FLOW	SUPPLY PRESSURE GAUGE (bar)
H1102*	Argon	230	3.5 bar	0 - 315
H1148	Argon	230	0 - 30 Lpm	0 - 315

* Regulator pre-set for use with a flowmeter.

Model 861/866 Flowmeters

Applications:

- ▶ Suitable for MIG/TIG welding

Features:

- ▶ Measure flow from 0 to 15/30 (Lpm) for Ar/CO₂
- ▶ Calibrated at 3.5 bar inlet pressure
- ▶ Easy to read polycarbonate outer cover, 360 ° visibility
- ▶ Brass body and knob
- ▶ Model 861 inlet 90° to knob (as shown), model 866 inlet 180° to knob

UK PART No	MODEL No	GAS	MAX INLET PRESSURE (bar)	FLOW (Lpm)
H1111	861	Argon/CO ₂	3.5	0 - 15
H1112	861	Argon/CO ₂	3.5	0 - 30
H1258	866	Argon/CO ₂	3.5	0 - 15
H1259	866	Argon/CO ₂	3.5	0 - 30



Model 92IDB Single stage one gauge double flow regulators

Applications:

- ▶ Suitable for MIG/TIG welding

Features:

- ▶ One regulator for two gas supply applications with separate flow control
- ▶ Maximum inlet pressure 300 bar
- ▶ Two flowmeters (With knob at 180° to inlet) with soft seat needle valve for smooth and precise control
- ▶ Flowmeters can be rotated to suite either side or top outlet cylinders



UK PART No	GAS	MAX INLET PRESSURE (bar)	FLOW (Lpm)	SUPPLY PRESSURE GAUGE (bar)	FLOWMETER (Lpm)
H1254	Argon	300	0 - 15	0 - 400	0 - 15
H1255	Argon	300	0 - 30	0 - 400	0 - 30
H1256*	Argon	300	0 - 15	0 - 400	0 - 15
H1257*	Argon	300	0 - 30	0 - 400	0 - 30

* Regulator supplied with a NEVOC cylinder connection.

Model 803P Inert gas guard

Applications:

- ▶ Designed to eliminate the pressure surge at the beginning of each weld in MIG/TIG welding, maintains a constant flow and pressure with each weld, permits gas savings over 60%.

Features:

- ▶ Harris Inert Gas Guards are designed to save shielding gases in two ways:
 - by reducing the gas surge when a MIG gun or TIG torch is activated. Because the 803-P are designed to reduce the pressure held in supply hose, gas waste is reduced when the gun or torch is triggered
 - by delivering a controlled flow rate
- ▶ Operators will typically set shielding gas flow rates higher than necessary for a welding operation. Once set by a supervisor, the Inert Gas Guard delivers the precise amount of flow for the operation, eliminating the needless waste of gas.

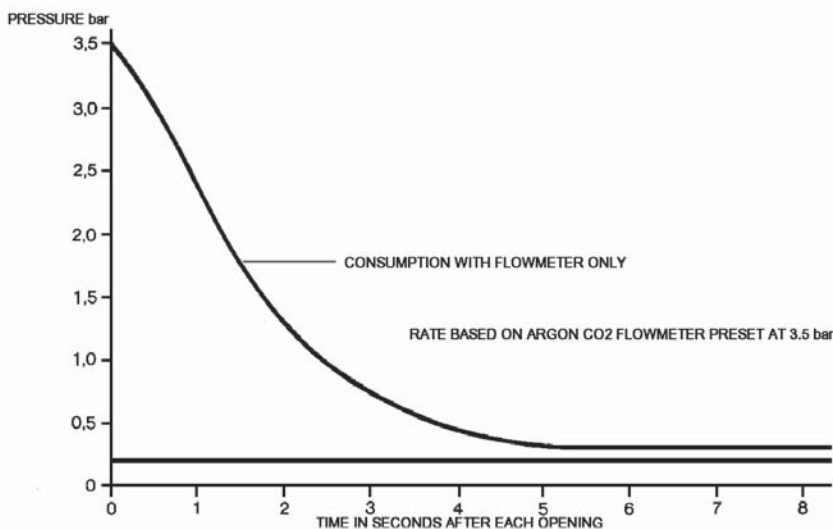


803P

Where to use:

Connect Model 803-P between your existing flowmeter and hose to torch. Table below shows part numbers to fit each flowmeter outlet thread.

UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	INLET	OUTLET
H1118	Argon / CO ₂	3.5	0.6-0.9	3/8"-BSPM RH	3/8" BSPF LH



- ▶ The curve on this chart illustrates the extent of costly shielding gas waste that can occur each time a MIG gun or TIG torch is activated. Conversely, the line illustrates how Harris Inert Gas Guard can significantly reduce gas waste by delivering a set flow of shielding gas.
- ▶ Actual Argon, Carbon Dioxide and other shielding gas savings will vary depending upon the specific requirements of the MIG or TIG welding operation
- ▶ Factory pre-set output pressure of 0.8 bar with maximum flow rate of 14 Lpm

Two stage regulators

Model 896B

Two stage two gauge regulator

Applications:

- ▶ Used where stable outlet pressure is required
- ▶ Ideal for quality cutting & welding applications

Features:

- ▶ Forged brass body for maximum strength
- ▶ Maximum inlet pressure of 230 bar
- ▶ First stage reduces full cylinder pressure by approximately 90%
- ▶ Large Ø 70 mm second stage diaphragm accurately controls delivery pressure



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1275	Acetylene	25	0 - 1.5	25	0 - 2.5	0 - 40
H1280	Oxygen	230	0 - 4	95	0 - 6	0 - 315
H1276	Oxygen	230	0 - 10	100	0 - 16	0 - 315
H1281	Inert Gas	230	0 - 4	95	0 - 6	0 - 315
H1277	Inert Gas	230	0 - 10	100	0 - 16	0 - 315
H1278	Hydrogen	230	0 - 10	100	0 - 16	0 - 315

Model 996

Two stage two gauge regulator

Applications:

- ▶ Used where stable outlet pressure is required
- ▶ Ideal for quality cutting, welding & laboratory applications

Features:

- ▶ Forged brass body for maximum strength
- ▶ Maximum inlet pressure of 300 bar
- ▶ High pressure capsulate seat with Kel-F (CTFE) sealing surface
- ▶ First stage reduces full cylinder pressure by approximately 90%
- ▶ Large Ø 70 mm second stage diaphragm accurately controls delivery pressure
- ▶ Durable chrome bonnet
- ▶ Bull nose "O" ring



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1041	Acetylene	25	0 - 1.5	25	0 - 2.5	0 - 40
H1042	Oxygen	300	0 - 4	85	0 - 6	0 - 400
H1043	Oxygen	300	0 - 10	100	0 - 16	0 - 400
H1049	Oxygen	300	0 - 15	120	0 - 25	0 - 400
H1096	Inert Gas	300	0 - 4	85	0 - 6	0 - 400
H1048	Inert Gas	300	0 - 10	100	0 - 16	0 - 400
H1054	Inert Gas	300	0 - 15	120	0 - 25	0 - 400
H1047	Hydrogen	300	0 - 4	85	0 - 6	0 - 400
H1070	Hydrogen	300	0 - 10	100	0 - 16	0 - 400
H1050	Hydrogen	300	0 - 15	120	0 - 25	0 - 400
H1065	CO ₂	300	0 - 10	100	0 - 16	0 - 400
H1066	Compressed Air	300	0 - 10	100	0 - 16	0 - 400

Stainless steel diaphragm options available.

High flow & high pressure regulators

Model H25

High flow cylinder regulator

Applications:

- ▶ Specially designed for high flow applications
- ▶ Ideal for feeding plasma and laser cutting systems

Features:

- ▶ Machined bar stock body
- ▶ Maximum inlet pressure of 300 bar
- ▶ High pressure capsulate seat with Kel-F (CTFE) sealing surface
- ▶ Stainless steel diaphragm
- ▶ Air flow up to 700 m³/h
- ▶ External safety relief valve
- ▶ 1/2" BSPM RH outlet
- ▶ Durable chrome bonnet
- ▶ Bull nose "O" ring



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1110	Oxygen	300	0 - 15	450	0 - 25	0 - 400
H1107	Inert Gas	300	0 - 40	720	0 - 60	0 - 400

Model 987

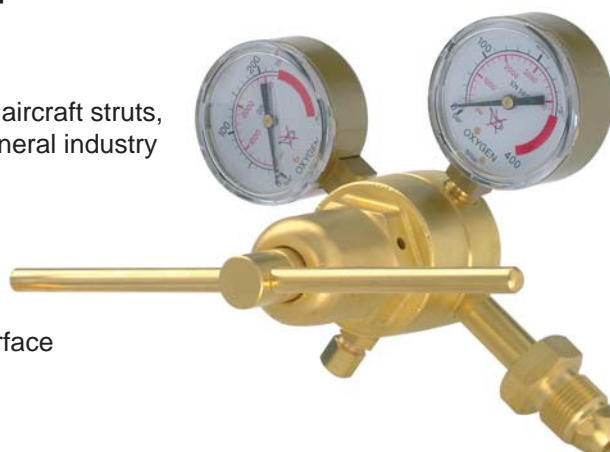
High pressure cylinder regulator

Applications:

- ▶ High pressure testing, charging accumulators, pressurising aircraft struts, oil refineries, chemical plants, research laboratories and general industry
- ▶ Ideal also for high pressure manifold systems

Features:

- ▶ Maximum inlet pressure of 300 bar
- ▶ Stainless steel diaphragm - no internal contamination
- ▶ High pressure capsulate seat with Kel-F (CTFE) sealing surface
- ▶ Corrosion resistant, forged brass body and bonnet
- ▶ Bronze bonnet bushing and stainless steel T screw
- ▶ Outlet is a 1/4" external diameter compression fitting
- ▶ Same regulator used for lightweight gases, without vibration



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
H1061	Oxygen	300	0 - 100	400	0 - 315	0 - 400
H1062	Oxygen	300	0 - 170	500	0 - 315	0 - 400
H1063	Inert Gas	300	0 - 100	400	0 - 315	0 - 400
H1064	Inert Gas	300	0 - 170	500	0 - 315	0 - 400

Model 8700 High pressure cylinder regulator

Applications:

- ▶ High pressure testing, charging accumulators, pressurising aircraft struts and general industry

Features:

- ▶ Maximum inlet pressure of 300 bar
- ▶ One piece encapsulated valve with CTFE seats & internal filter
- ▶ Elastomeric diaphragm for longer life
- ▶ Ergonomic knob for improved grip
- ▶ All gas and air models are self relieving



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
TBA	Inert Gas	300	0 - 205	500	0 - 280	0 - 400
TBA	Inert Gas	300	0 - 300	400	0 - 400	0 - 400

* Part number issued when inlet and outlet are confirmed.

Model HP750 Servo dome loaded regulator

Applications:

- ▶ Laser assist gases, pressure transfer, blanketing & high flow manifolds
- ▶ Applications where a constant flow and pressure are required

Features:

- ▶ High pressure, high flow regulator
- ▶ Maximum inlet pressure of 380 bar
- ▶ One piece encapsulated seat design with 10 micron filtration
- ▶ Servo dome loaded technology, the regulator has an internal pressure feedback sensing line which monitors the outlet pressure and constantly opens or closes the regulator valve to maintain the internal pressure balance. The result is a constant delivery pressure regardless of the flow rate or inlet pressure conditions.



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	SUPPLY PRESSURE GAUGE (bar)
TBA	Inert Gas	300	0 - 17	>1000	0 - 28	0 - 400
TBA	Inert Gas	300	0 - 35	>1000	0 - 42	0 - 400
TBA	Inert Gas	300	0 - 70	>1000	0 - 138	0 - 400

* Part number issued when inlet and outlet are confirmed.

Heated regulators

Model 9II

Electrically heated regulator regulator

Applications:

- ▶ Ideal for all welding applications using CO₂, also Argon mixed gases where high flowrates are in use causing regulator freezing

Features:

- ▶ Maximum inlet pressure of 300 bar
- ▶ CE marked
- ▶ Two independent heating elements controlled by thermostat
- ▶ Stabilized temperature up to 30 Lpm continuous CO₂
- ▶ Overheating protection with re-settable thermal fuse
- ▶ Insulation IP 64 (EN 60529)
- ▶ Voltage: 110 and 240 volt versions
- ▶ 3 meter long (9.87 feet) power cable



UK PART No	GAS	VOLTAGE	MAX INLET PRESSURE (bar)	DELIVERY MODE	DELIVERY MODE GAUGE	SUPPLY PRESSURE GAUGE (bar)
H1260	Ar/CO ₂	110V	300	0 - 30 (Lpm)	0 - 30 (Lpm)	0 - 400
H1261	Ar/CO ₂	220V	300	0 - 30 (Lpm)	0 - 30 (Lpm)	0 - 400
H1262	CO ₂	110V	300	0 - 30 (Lpm)	0 - 30 (Lpm)	0 - 400
H1263	CO ₂	220V	300	0 - 30 (Lpm)	0 - 30 (Lpm)	0 - 400
H1264	Inert Gas	110V	300	0 - 10 bar	0 - 16 bar	0 - 400
H1265	Inert Gas	220V	300	0 - 10 bar	0 - 16 bar	0 - 400
H1268*	Ar/CO ₂	110V	300	0 - 30 (Lpm)	0 - 30 (Lpm)	0 - 400
H1269*	Ar/CO ₂	220V	300	0 - 30 (Lpm)	0 - 30 (Lpm)	0 - 400

* Regulator supplied with a NEVOC cylinder connection.

Pipeline Regulators

Model H47

High flow pipeline regulators with one gauge

Applications:

- ▶ Designed for high flow pipeline requirements

Features:

- ▶ High flow and outlet pressure (Up to 40 bar)
- ▶ Rear inlet connection
- ▶ Air flow over 330 m³/h
- ▶ Maximum inlet pressure 60 bar
- ▶ T screw provides smooth action and long service



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)
H1357	Inert Gas	60	0 - 15	330	0 - 25
H1356	Oxygen	60	0 - 15	330	0 - 25
H1108	Oxygen	60	0 - 40	390	0 - 60

Model 847 Pipeline regulator with one gauge

Applications:

- ▶ Specially designed to allow high flow rates from industrial and laboratory pipeline outlet points
- ▶ Particularly suited to machine cutting where more than one torch is in use.

Features:

- ▶ High flow and outlet pressure (Up to 15 bar)
- ▶ Forged brass body for maximum strength
- ▶ Sintered alloy filter to trap impurities
- ▶ Maximum inlet pressure 25 bar
- ▶ Inlet 1/4 NPTF
- ▶ 15 & 30 Lpm flow versions available for Argon and CO₂



UK PART No	GAS	MAX INLET PRESSURE (bar)	DELIVERY PRESSURE (bar)	MAX AIR FLOW (m ³ /h)	DELIVERY PRESSURE GAUGE (bar)	FLOWGAUGE (Lpm)
H1075	Acetylene	25	0 - 1.5	13	0 - 2.5	-
H1076	Propane	25	0 - 4	76	0 - 6	-
H1077	Oxygen	25	0 - 4	80	0 - 6	-
H1078	Oxygen	25	0 - 10	95	0 - 16	-
H1080	Oxygen	25	0 - 15	135	0 - 25	-
H1084	Argon	25	0 - 10	95	0 - 16	-
H1379	Argon	25	-	-	-	0 - 30

Speciality Gas Regulators


HP721C - Single Stage Two Gauge.

- ▶ Brass bar stock, chrome plated.
- ▶ Stainless steel diaphragm
- ▶ For high purity gases Grade 5.0 (99.999).
- ▶ Available in working pressures - 15, 50, 125, 250 & 500 psi.


HP741 - Single Stage Two Gauge.

- ▶ Stainless bar stock
- ▶ Stainless steel diaphragm
- ▶ For high purity & corrosive gases
- ▶ Grade 6.0 (99.9999).
- ▶ Available in working pressures - 15, 50, 125, 250 & 500 psi.


HP722C - Two Stage Two Gauge.

- ▶ Brass bar stock, chrome plated.
- ▶ Stainless steel diaphragm
- ▶ For high purity gases Grade 5.0 (99.999).
- ▶ Available in working pressures - 15, 50, 125, 250 & 500 psi.


HP742 - Two Stage Two Gauge.

- ▶ Stainless bar stock
- ▶ Stainless steel diaphragm
- ▶ For high purity & corrosive gases
- ▶ Grade 6.0 (99.9999).
- ▶ Available in working pressures - 15, 50, 125, 250 & 500 psi.


HP723C - Pipeline Regulator

- ▶ Brass bar stock, chrome plated.
- ▶ Stainless steel diaphragm
- ▶ For high purity gases Grade 5.0 (99.999).
- ▶ Available in working pressures - 15, 50, 125, 250 & 500 psi.


HP743 - Pipeline Regulator.

- ▶ Stainless bar stock
- ▶ Stainless steel diaphragm
- ▶ For high purity & corrosive gases
- ▶ Grade 6.0 (99.9999).
- ▶ Available in working pressures - 15, 50, 125, 250 & 500 psi.

* Part number issued when inlet and outlet are confirmed.

Specialty Gas Manifold

Series SG 900 Semi-Automatic Manifold



Series SG 960 Fully Automatic Switchover



Regulation Box



Control Box



Alarm Box



Manifold Depth: 26 cm
Cabinet Weight: 25 Kg.

Please call our customer service for more information

Designed and manufactured according to EN ISO 5172.

Harris offers torches specifically designed for the best performance possible with each fuel gas:

Low pressure system with Acetylene, Propane, LPG and MAPP®:

- ▶ Injector style
- ▶ Low pressure head mixing - fuel gas can be used at pressures as low as 0.015 bar
- ▶ Steady preheat flame during cutting
- ▶ Less fuel gas intake during cutting
- ▶ Pays for itself by drawing all fuel gas out of cylinder

Standard torches are not supplied with inlet hose connections or cutting tips

Model 62



90° Head

...for Acetylene and low-cost fuel gases such as Propane, Natural Gas, MAPP® Gas, and Propylene

The industry standard by which all other designs are compared. The 62-5 is less expensive to own, operate and safer to use.

Our special 62 "F" injector mixer can produce the hottest flame possible at the lowest gas pressure making it the safest, most efficient design in the industry.

- ▶ Cuts up to 300 mm steel
- ▶ Solid forged head and lever
- ▶ Triangular tube design
- ▶ Brazed connections
- ▶ Head mixing
- ▶ Use with 6290 tips (see page 30-31)



70° Head



180° Head

PROPANE									
90° Head			70° Head			180° Head			Length (mm)
UK Part No	Model No	Weight (Kg)	UK Part No	Model	Weight (Kg)	UK Part No	Model	Weight (Kg)	
H3047	62-5F	1.27	-	-	-	H3021	62-5BF	1.14	460
H3023	62-5FL685	1.32	H3022	62-5AFL685	1.58	-	-	-	685
H3010	62-5FL835	1.59	H3009	62-5AFL835	1.58	H3056	62-5BFL835	1.42	835
H3237	62-5FL900	1.7	H3181	62-5AFL900	1.69	H3231	62-5BFL900	1.52	900
H3065	62-5FL1210	1.82	H3188	62-5AFL1210	1.80	H3014	62-5BFL1210	1.63	1210
H3068	62-5FL1500	2.00	-	-	-	-	-	-	1500
H3212	62-5FL2000	2.50	H3214	62-5AFL2000	2.52	-	-	-	2000
ACETYLENE									
H3046	62-5	1.27							460

Model 142



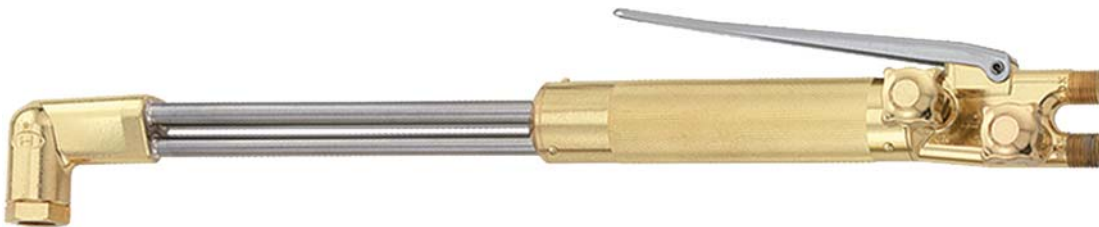
- ▶ Cuts up to 200 mm
- ▶ Stainless steel lever with hold-down button
- ▶ Triangular tube design
- ▶ Solid forged head
- ▶ Use with 6290 tips (see page 30-31)

142-E TORCH FOR ACETYLENE		
90°Head		
UK PART No	Model	Weight (Kg)
H3028	142-E	1.11

142-F LOW PRESSURE "F" INJECTOR TORCH (FOR MAXIMUM PERFORMANCE WITH ALTERNATIVE FUELS)			
90°Head			Length (mm)
UK PART No	Model	Weight (Kg)	
H3004	142-F	1.11	460

Supplied with 3/8" BSP inlet threads

Model 242 NMGB



- ▶ Cuts up to 300 mm
- ▶ Operates with all fuel gases
- ▶ Top stainless steel lever
- ▶ Triangular tube design
- ▶ Tip mix principle
- ▶ Superior construction
- ▶ Use with 8290 tips (see page 29)

Supplied with 3/8" BSP inlet threads

242NMGB				
90°Head		70°Head		Length (INCH)
UK Part No	Model No	UK Part No	Model	
H3314	242NMGB 18"	-	-	18"
H3315	242NML36GB	H3316	242NMAL36GB	36"
H3317	242NML48GB	-	-	48"

Classic Cutting Attachments

- ▶ Solid forged head resists abuse and distortion
- ▶ Triangular tube design is compact and lightweight with exceptional strength and rigidity
- ▶ Brazed connections prevent leaks
- ▶ Protected torch union nut protects seats and o-rings from abuse
- ▶ Solid forged lever for exceptional strength
- ▶ Ease-on cutting oxygen control for smoother starts

49 Low Pressure Cutting Attachments (for Acetylene)

UK PART No	MODEL	HEAD ANGLE	COMPATIBLE CUTTING TIPS	COMPATIBLE HANDLE	WEIGHT (Kg)	LENGTH (mm)
H2123	49-3	90°	6290	43-2	0.678	248



49-3 Cuts up to 150 mm

49-F Low Pressure "F" Cutting Attachments (for Alternative Fuels)

UK PART No	MODEL	HEAD ANGLE	COMPATIBLE CUTTING TIPS	COMPATIBLE HANDLE	WEIGHT (Kg)	LENGTH (mm)
H2124	49-3F	90°	6290	43-2	0.678	248
H2313	*49-3FL360	90°	6290	43-2	0.736	348

* Available upon request.



59-3 Cuts up to 150 mm

59-3 & 59-3MX Tip Mix Cutting Attachments (for Acetylene and Alternative Fuels)

UK PART No	MODEL	HEAD ANGLE	COMPATIBLE CUTTING TIPS	COMPATIBLE HANDLE	WEIGHT (Kg)	LENGTH (mm)
H2073	59-3	90°	8290	43-2	0.646	259
H2144	59-3MX	90°	8290	543MX	0.646	259

* Available upon request.



73-3MX Cuts up to 100 mm

73-2MX Equal Pressure "E" Cutting Attachments (for Acetylene and Alternative Fuels)

UK PART No	MODEL	HEAD ANGLE	COMPATIBLE CUTTING TIPS	COMPATIBLE HANDLE	WEIGHT (Kg)	LENGTH (mm)
H2219	73-3MX	90°	6290	543MX	0.636	227



36-2 Cuts up to 75 mm

36 Equal Pressure "E" Cutting Attachments (for Acetylene and Alternative Fuels)

UK PART No	MODEL	HEAD ANGLE	COMPATIBLE CUTTING TIPS	COMPATIBLE HANDLE	WEIGHT (Kg)	LENGTH (mm)
H2017	36-2	90°	3690	19-6, 50-10	0.326	189

Equal Pressure "E" Type Mixer



E-43



E-243



E3-43/F-43



H-19-2E

UK PART No	MODEL	FITS HANDLE	GAS	WELDING TIPS	HEATING TIPS	BRAZING TIPS	FLAME CLEANING TIPS
H2177	E-43	43-2	Oxy-Acetylene	23A90 tips 0,1,3,5,6,8,9,10 0090 tips 1,3,5,6,8 (+adapter 4301-11+TH-119) 1390 tips 00,0,1,3,5,6,8,9,10 (+tube 8593)	J-63 tips 1,2 1390-HA (+tube 8593)	-	-
H2145	E-43-MX	543-MX	Oxy-Acetylene	TYPE 2/3 1,2,3,5,7,10,13,18			
H2087	E2-43	43-2	Oxy-Acetylene	23A90 tips 13,15	J-63 tips 3,4	-	RBA-43 tips 2,4,6 (+tube 2393+2357-3)
H2022	H-19-2E	19-6, 50-10	Oxy-Acetylene	5090 tips 0,1,3,5,6,8,9,10	J-63-tips 1,2 (+adapter 1901-11)	-	-
				0090 tips 1,3,5,6,8 (+tip holder TH-119)	1390-HA (+tube 8593)		
				1390 tips 00,0,1,3,5,6,8,9,10 (+tube D-50-C)	-		
H2086	F-43	43-2	Oxy-Propane	-	2290-H tips 1,2,3,4,5 (+ tube 2393+2357-3)	2290-N tips 13,15,20,30,80 (+tube 2393+2357-3)	RBP-43 tips 2,4,5 (+tube 2393+2357-3)
H2009	F-43-MX	543-MX	Oxy-Propane				

Low Pressure "F" Type Mixer



B-43-N



H-19-2S



B-43-1/2/3/5/6/8/9/10

UK PART No	MODEL	FITS HANDLE	GAS	HEATING TIPS	BRAZING TIPS	FLAME CLEANING TIPS
H2074	B-43-N	43-2	Oxy-Propane	2290-H tips 1,2,3,4,5 (+ tube 2393)	2290-N tips 13,15,20,30,80 (+tube 2393+2357-3)	RBP-43 tips 2,4,5 (+tube 2393+2357-3)
	B-43-1	43-2	Oxy-Propane	-	1390-2N (+tube 8593) 0090-2N (+adapter 4301-11+tip holder TH-119)	-
	B-43-2	43-2	Oxy-Propane	-	1390-3N/4N (+tube 8593) 0090-4N (+adapter 4301-11+tip holder TH-119)	-
H2010	B-43-5	43-2	Oxy-Propane	-	1390-5N (+tube 8593)	-
	B-43-6	43-2	Oxy-Propane	-	1390-6N/7N (+tube 8593) 0090-6N (+adapter 4301-11+tip holder TH-119))	-
H2011	B-43-8	43-2	Oxy-Propane	-	1390-8N/H (+tube 8593) 0090-8N (+adapter 4301-11+tip holder TH-119)	-
	B-43-9	43-2	Oxy-Propane	-	1390-9N (+tube 8593)	-
	B-43-10	43-2	Oxy-Propane	-	1390-10N (+tube 8593)	-
H2025	H-19-2S	19-6, 50-10	Oxy-Propane	1390-H (+tube D-50-C)	1390-N tips 2,3,4,5,6,7,8,9,10 (+tube D-50-C)	-
				-	0090-N tips 2,4,6,8	-

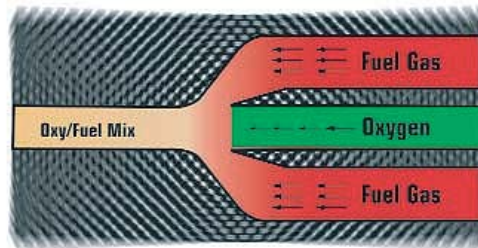
Fuel Mixer

Harris Calorific offers two types of oxy/fuel mixers.

Equal pressure or positive pressure mixers are referred to as "E" type mixers while, low pressure injector mixers are referred to as "F" mixers.

The type of mixer which best suits the need depends on the application and the available fuel gas supply.

The following explains some of the features and benefits of each mixer design.



Typical "E" Mixer Design

To thoroughly mix the oxygen and fuel gas, "E" mixer designs rely on equal pressure control of both oxygen and fuel gas.

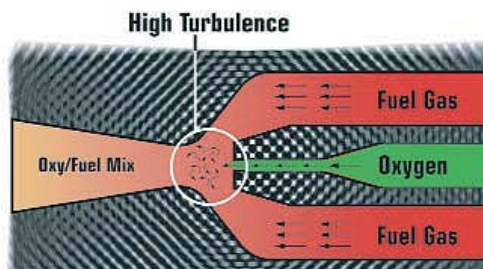
Both gases enter the mixing chamber at controlled pressures.

"E" mixers allow the end-user greater control of the oxy/fuel ratio.

This feature has an advantage in applications where a very carburizing or oxidizing flame is required.

Also, because of their higher potential flow rates, "E" mixers are required for high flow heating applications.

This design is primarily used with acetylene but can also be used with alternative fuels when positive pressure control of the fuel gas is available



Typical "F" Mixer Design

"F" or low pressure injector mixers require that only the oxygen has a positive pressure control.

The oxygen exits a specially designed chamber at a very high velocity which causes the fuel gas to be aspirated into the mixing chamber.

Because of the aspirating effect on the fuel gas, positive control of the fuel gas is not required. In fact, the mixers in the Harris Calorific line are designed to operate at fuel gas pressures as low as 0.015 bar.

"F" mixers tend to produce a more homogenous oxy/fuel mixture because of the high turbulence in the mixing chamber.

This feature is most important when using the more difficult to mix alternative fuels.

"F" mixers tend to have a narrower operating range than "E" mixers but because of their superior mixing capabilities they tend to maximize calories output within that range.

"F" mixers are used primarily with low pressure natural gas.

However, they are also recommended for use with alternative fuels when maximum calories output is needed and / or positive pressure control of the fuel gas is not available.

189-2 Automatic Soldering And Heating Assembly Propane, Natural Gas

- ▶ Large area soft soldering
- ▶ Preheating castings for welding
- ▶ Heating pipes in chemical plants
- ▶ Mould drying
- ▶ Metal cleaning (Brewery, Vats, Rubber Mould, etc.)
- ▶ Burning paint
- ▶ Heating forming dies prior to hard facing
- ▶ Stress relieving die shoes
- ▶ For use with compressed air only
- ▶ Torch sold complete with 81-12 tip
- ▶ Inlets 3/8 BSP



The Harris 189-2 heating and soldering torch is designed to operate with natural gas (0,015 bar or more) or propane in combination with 3 to 7 bar of compressed air only. The 189-2 is completely automatic. Once adjusted to the proper flame, the pilot light can be retained during down time and full flame returned instantly by pressing the hand lever. The pilot light can be enlarged to a full "smoothing on" secondary flame when used for soldering. The tip can be positioned in any direction.



81-12 TIP

UK PART No	MODEL	
H2250	189-2	Torch Complete with 81-12 Heating Tip

81-12 Heating Tip

UK PART No	MODEL	HEAT OUTPUT (Kcal/h)	COMPRESSED AIR		PROPANE	
			PRESSURE (bar)	FLOW (l/h)	PRESSURE (bar)	FLOW (l/h)
PROPANE						
H2251	81-12	66000	7	45000	0,3	3000
NATURAL GAS						
H2251	81-12	83000	7	40000	0,015	9000

Model 19-6-GB

Welds up to 14 mm
Cuts up to 75 mm

The model 19-6 combination torch handle for cutting, welding, brazing and heating. It can be used with oxy-acetylene or other fuel gases. The model 19-6 features silver brazed twin tube construction. Valves are located at the front of torch handle for more precise control while brazing.

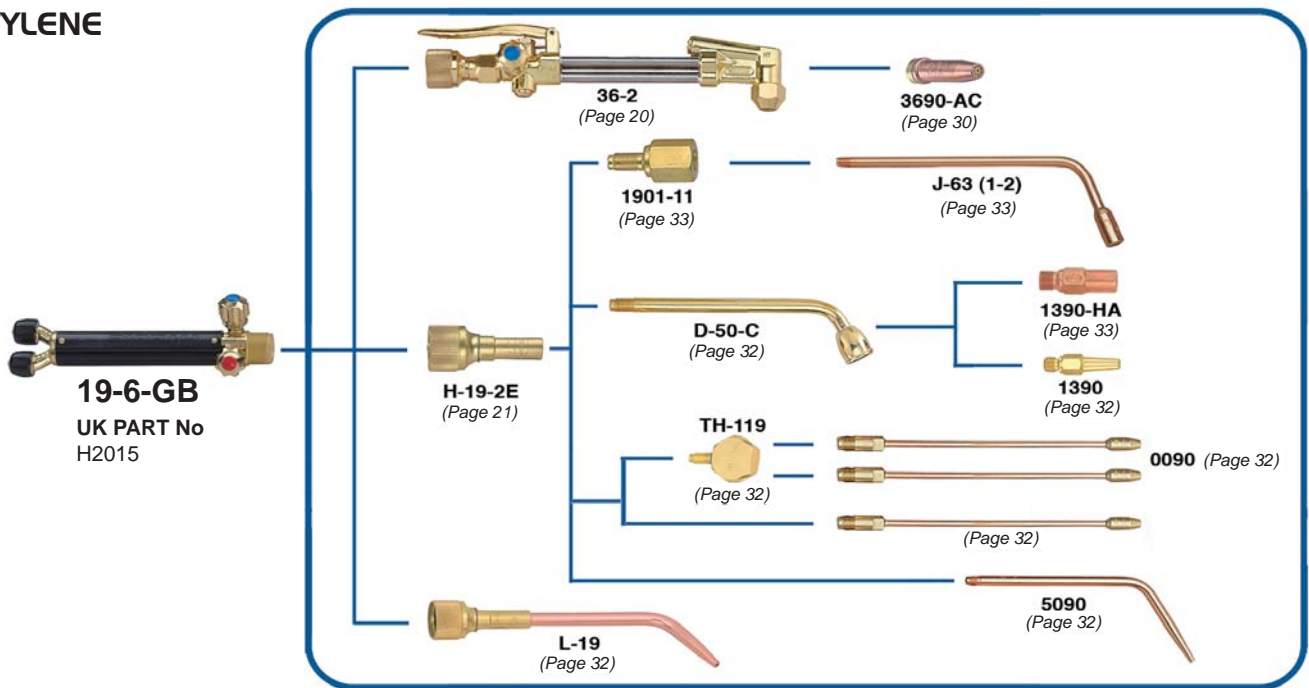


Features:

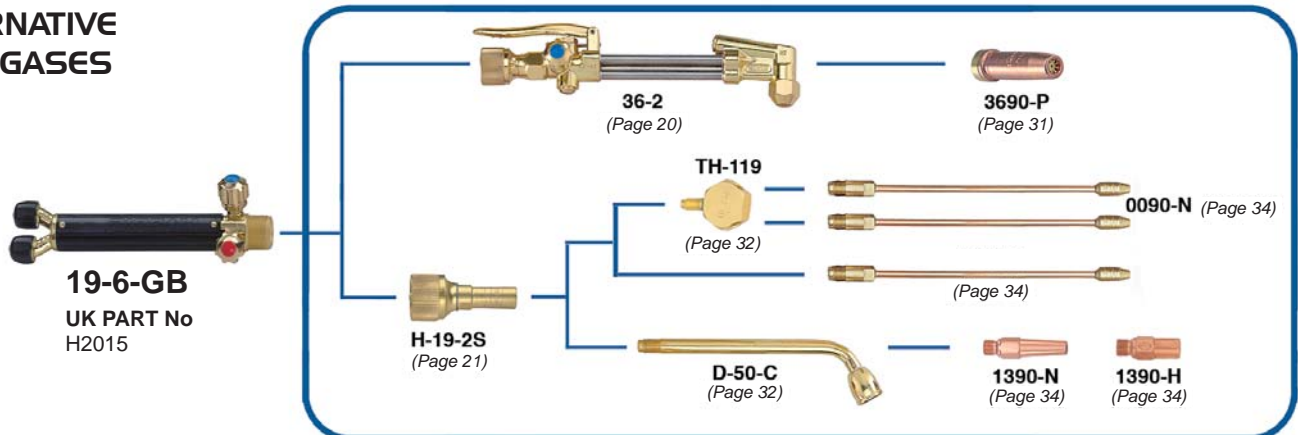
- ▶ Light weight handle
- ▶ Silver brazed twin tube construction for safety and durability
- ▶ Ball valve for fast and accurate flame adjustment

UK PART No	MODEL	COMPATIBLE CUTTING ATTACHMENT	THREAD OXYGEN	THREAD FUEL GAS	WEIGHT (Kg)	LENGTH (mm)
H2015	19-6-GB	(H2017) 36-2	1/4" BSP RH	1/4" BSP LH	0.238	154

ACETYLENE



ALTERNATIVE FUEL GASES



Model 50-10-GB

Welds up to 14 mm



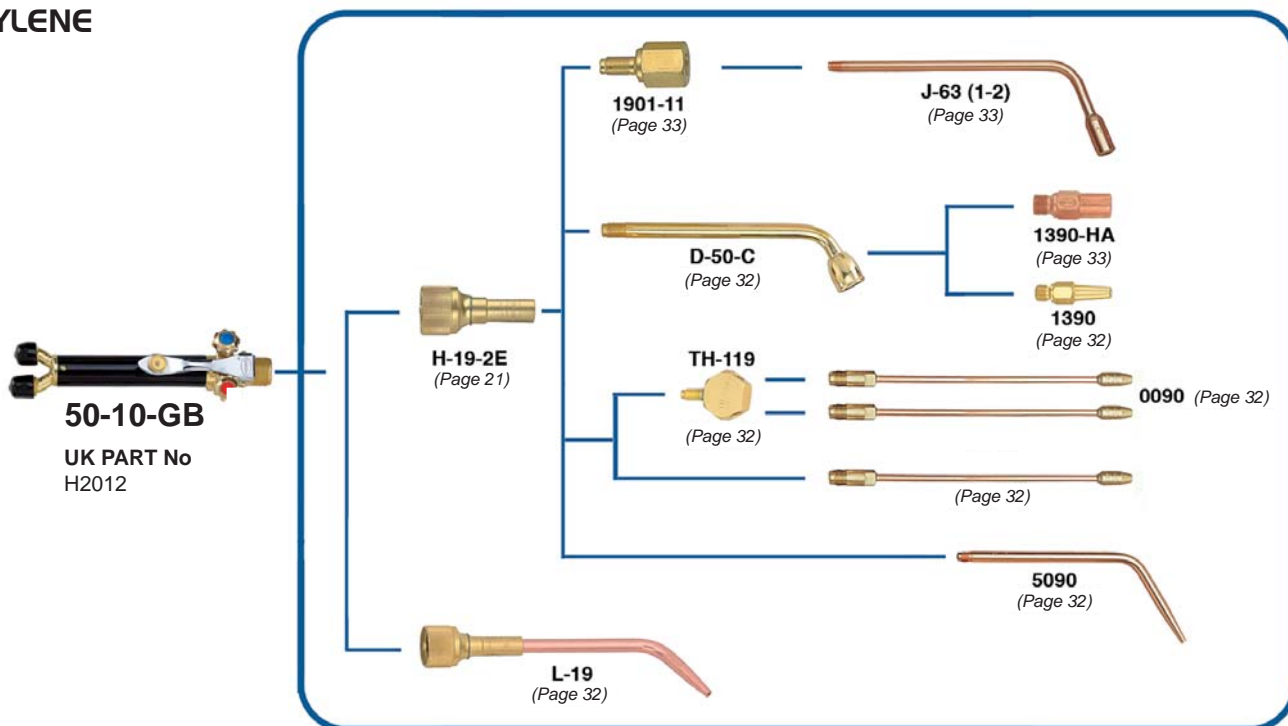
Automatic Torch Handle. The Harris 50-10 automatic torch handle feature a unique gas control system to reduce operating and improve safety and convenience. The thumb operated on/off gas control and adjustable pilot light eliminate relighting and flame readjustment each time the torch is used. The on/off feature can be used for cutting, brazing, and welding with all oxy fuel gases. The pilot flame light feature is not recommended when using cutting attachments or heating tips.

Features:

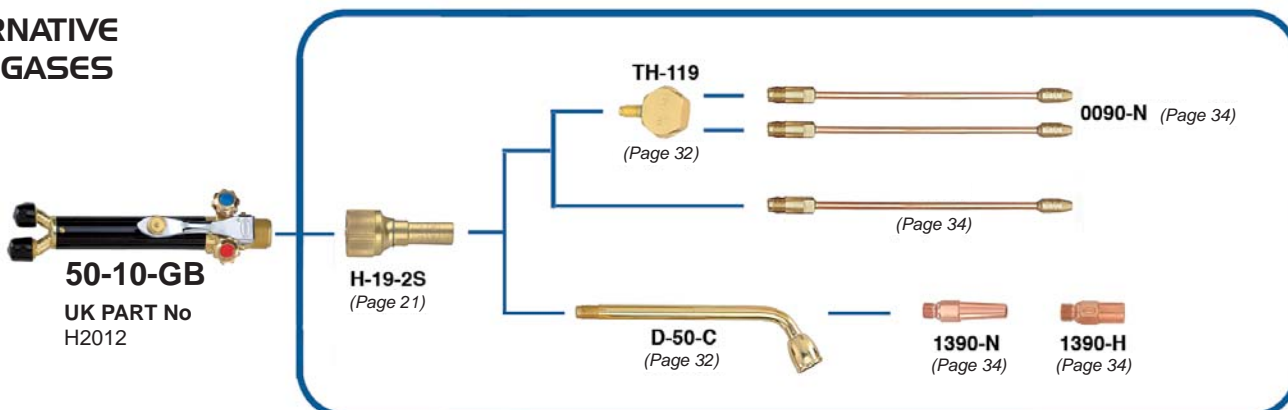
- ▶ Automatic on/off gas control
- ▶ Adjustable pilot light

UK PART No	MODEL	COMPATIBLE CUTTING ATTACHMENT	THREAD OXYGEN	THREAD FUEL GAS	WEIGHT (Kg)	LENGTH (mm)
H2012	50-10-GB	(H2017) 36-2	1/4" BSP RH	1/4" BSP LH	0.308	169

ACETYLENE



ALTERNATIVE FUEL GASES



Model 43-2GB

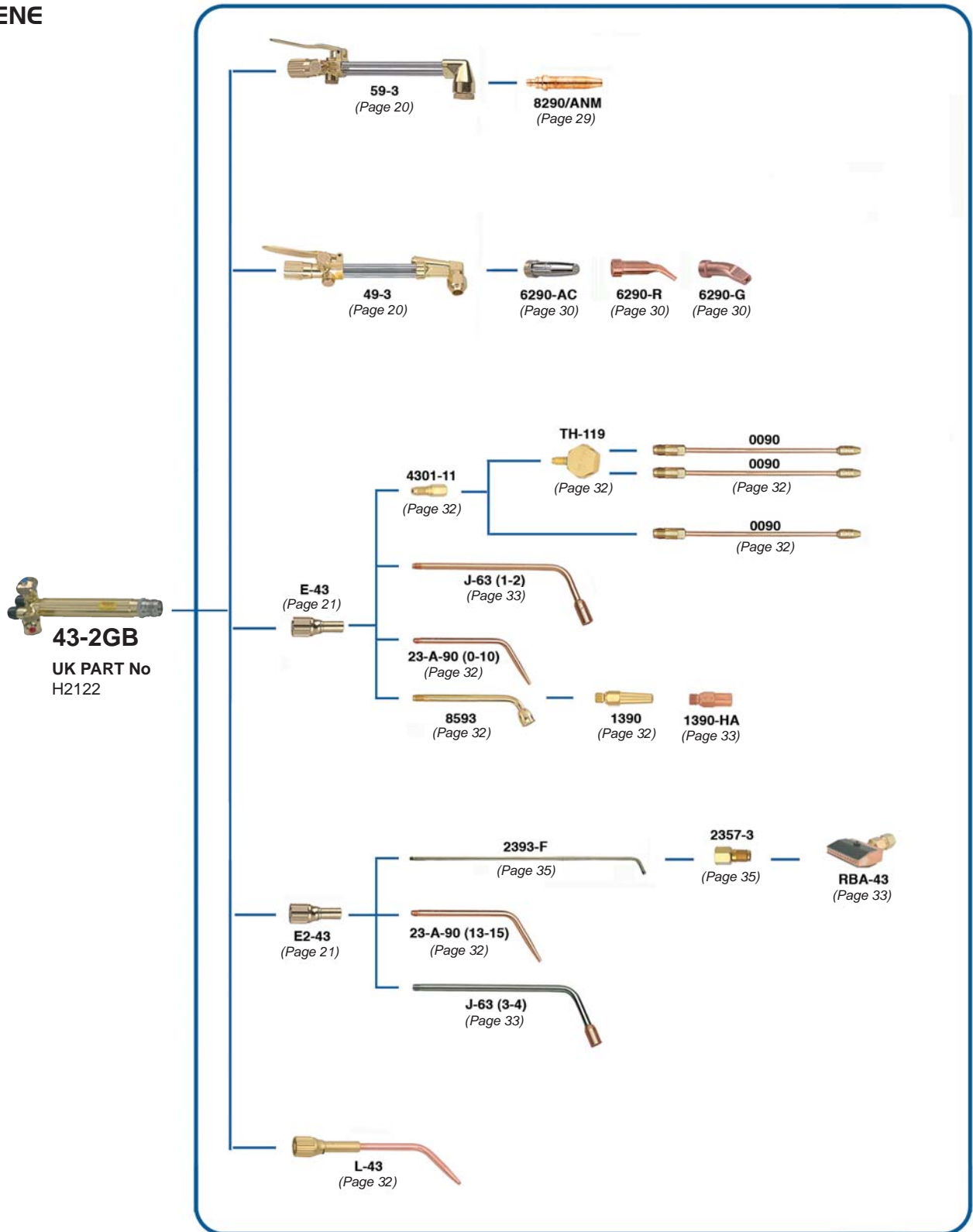
Welds up to 50 mm
Cuts up to 150 mm

This model is a high capacity combination handle.

With proper accessories, it can be used for either acetylene or other fuel gases.



ACETYLENE

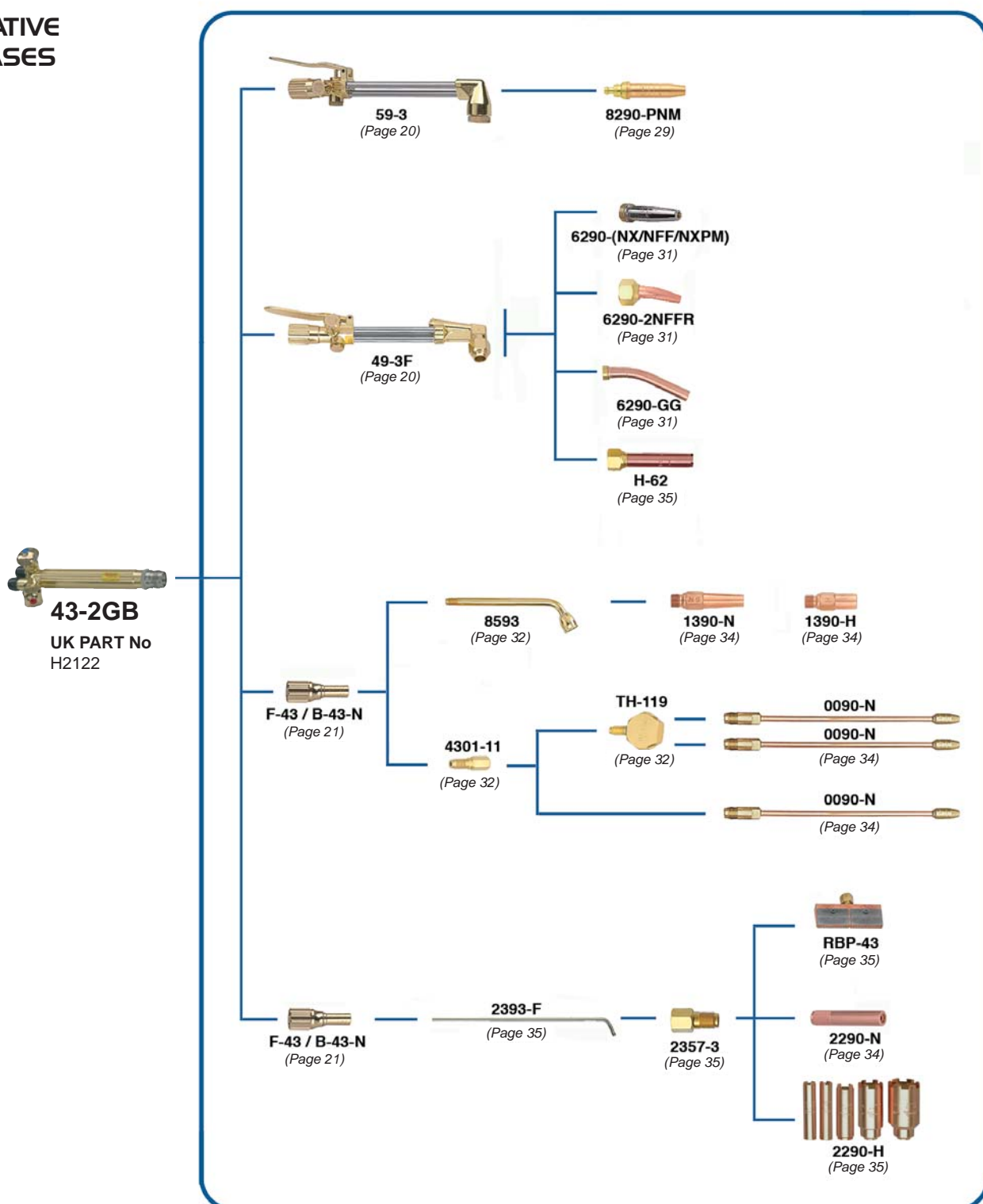


Features:

- ▶ Stainless steel head
- ▶ Tough extruded brass handle
- ▶ Stainless steel ball valves
- ▶ No screws or soldered parts for easier maintenance

UK PART No	MODEL	COMPATIBLE CUTTING ATTACHMENT	THREAD OXYGEN	THREAD FUEL GAS	WEIGHT (Kg)	LENGTH (mm)
H2122	43-2GB	49-3, 49-3F, 59-3	3/8" BSP RH	3/8" BSP LH	0.558	208

ALTERNATIVE FUEL GASES



Model 543-MX

Welds up to 50 mm
Cuts up to 150 mm

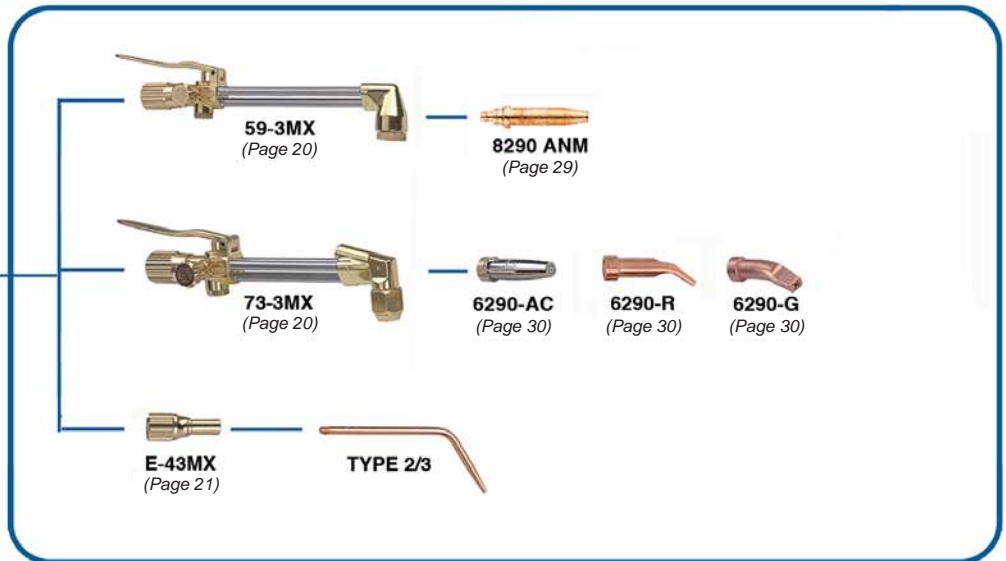


Features:

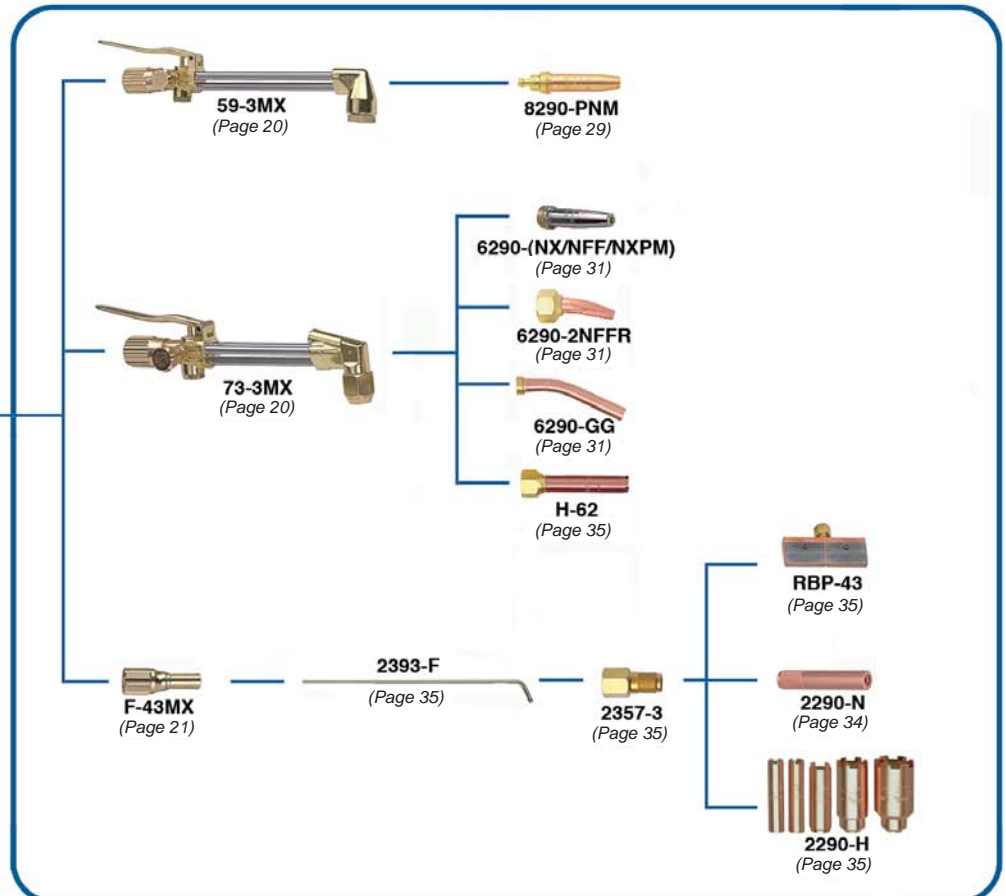
- ▶ Conforms to EN ISO 5172
- ▶ Ergonomic design with front valves
- ▶ Forged aluminium alloy body
- ▶ High precision ball valves
- ▶ Coated with tough black polyurethane for longer life

UK PART No	MODEL	COMPATIBLE CUTTING ATTACHMENT	THREAD OXYGEN	THREAD FUEL GAS	WEIGHT (Kg)	LENGTH (mm)
H2238	543MX	(H2114) 59-3MX	3/8" BSP RH	3/8" BSP LH	0.507	211
H2238		(H2219) 73-3MX				

ACETYLENE



ALTERNATIVE FUEL GASES



Acetylene Cutting Tips Tip Mix Tips



Nozzle Mix Tip 8290-ANM Oxy-Acetylene

UK PART No	TIP SIZE	PLATE THICKNESS (mm)	OXYGEN (bar)	FUEL GAS (bar)	WHERE USED
H3240	ANM 1/32	6 - 13	2.0	0.15	NM242GB, 59-3, 59-3MX
H3241	ANM 3/64	13 - 25	2.1	0.15	"
H3242	ANM 1/16	25 - 75	3.0	0.15	"
H3243	ANM 5/64	75 - 100	3.5	0.15	"
H3244	ANM 3/32	100 - 150	4.2	0.2	"
H3246	ANM 1/16	150 - 300	6.2	0.3	NM242GB

Alternative Fuels Cutting Tips Tip Mix Tips



Two Piece Nozzle Mix Tip 8290-PNM Oxy-Propane

UK PART No	TIP SIZE	PLATE THICKNESS (mm)	OXYGEN (bar)	FUEL GAS (bar)	WHERE USED
H3250	PNM 1/32	6 - 13	2.0	0.21	NM242GB, 59-3, 59-3MX
H3251	PNM 3/64	13 - 25	2.1	0.21	"
H3252	PNM 1/16	25 - 75	3.0	0.21	"
H3253	PNM 5/64	75 - 100	3.5	0.3	"
H3254	PNM 3/32	100 - 150	4.2	0.4	"
H3256	PNM 1/16	150 - 300	6.2	0.5	NM242GB

Acetylene Cutting Tips

Heavy Preheat 6290-AC Two Piece Oxy-Acetylene Tip Chart



Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	OXYGEN (bar)	ACETYLENE Low Pressure (bar)
H3045	6290-000AC	0 - 5	1.0 - 2.0	0.015 - 0.2
H3031	6290-00AC	5 - 10	1.0 - 2.0	0.015 - 0.2
H3032	6290-0AC	10 - 15	1.5 - 2.5	0.015 - 0.2
H3033	6290-1AC	15 - 25	2.0 - 3.5	0.015 - 0.2
H3034	6290-2AC	25 - 50	3.0 - 4.5	0.015 - 0.2
H3035	6290-3AC	50 - 100	3.0 - 4.5	0.015 - 0.2
H3036	6290-4AC	100 - 175	3.5 - 5.5	0.015 - 0.2
H3037	6290-5AC	175 - 250	4.5 - 5.5	0.015 - 0.2
H3038	6290-6AC	250 - 300	5.0 - 6.5	0.015 - 0.2



Unplated Shell

3690-AC Oxy-Acetylene Tip Chart

UK PART No	MODEL	METAL THICKNESS (mm)	OXYGEN (bar)	ACETYLENE Equal Pressure (bar)	WHERE USED
H2031	3690-00AC	0 - 6	1.0 - 2.0	0.35	36-2 Cutting Attachment
H2032	3690-0AC	6 - 13	1.5 - 2.5	0.35	36-2 Cutting Attachment
H2033	3690-1AC	13 - 25	2.0 - 3.5	0.35	36-2 Cutting Attachment
H2034	3690-2AC	25 - 75	3.0 - 4.5	0.35	36-2 Cutting Attachment



6290-G 6290-R

6290 Oxy-Acetylene Specialty Tip Chart

UK PART No	MODEL	APPLICATION	OXYGEN (bar)	ACETYLENE Equal Pressure (bar)	ACETYLENE Low Pressure (bar)	WHERE USED
H3040	6290-2D	Sheet Nozzle	3.5	0.3 - 0.5	0.015 - 0.2	Recommended for Straight Cutting Torches
H3041	6290-1G	Gouging Wide 3x6 mm	2.5	0.3 - 0.5	0.015 - 0.2	
H3042	6290-2G	Gouging Wide 5x10 mm	3.5	0.3 - 0.5	0.015 - 0.2	
H3043	6290-3G	Gouging Wide 6x13 mm	3.5	0.3 - 0.5	0.015 - 0.2	
H3019	6290-R	Rivet Cutting	3.0	0.3 - 0.5	0.015 - 0.2	

Cleaning Instructions: Use Tip Cleaner C-9

3690 Oxy-Acetylene Specialty Tip Chart

UK PART No	MODEL	APPLICATION	WHERE USED
H2026	3690-ASC	Sheet Cutting	3C-2 Cutting Attachment

Alternative Fuel Cutting Tips

General Preheat 6290-NX Oxy-Propane, Natural Gas Tip Chart



Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	OXYGEN (bar)	FUEL GAS Equal Pressure (bar)	FUEL GAS Low Pressure (bar)
H3070	6290-000NX	0 - 5	1.0 - 2.0	0.3 - 0.5	0.015 - 0.2
H3071	6290-00NX	5 - 10	1.5 - 2.0	0.3 - 0.5	0.015 - 0.2
H3072	6290-0NX	10 - 15	2.0 - 3.0	0.3 - 0.5	0.015 - 0.2
	6290-1NX	15 - 25	2.5 - 3.5	0.3 - 0.5	0.015 - 0.2
	6290-2NX	25 - 50	3.0 - 4.0	0.3 - 0.5	0.015 - 0.2
	6290-3NX	50 - 75	3.0 - 4.5	0.3 - 0.5	0.015 - 0.2
	6290-4NX	75 - 150	3.5 - 5.5	0.3 - 0.5	0.015 - 0.2
	6290-5NX	150 - 200	4.5 - 5.5	0.3 - 0.5	0.015 - 0.2
	6290-6NX	200 - 300	5.0 - 6.5	0.3 - 0.5	0.015 - 0.2

Heavy Preheat 6290-NFF Oxy-Propane, Natural Gas Tip Chart



Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	OXYGEN (bar)	FUEL GAS Equal Pressure (bar)	FUEL GAS Low Pressure (bar)
H3081	6290-1NFF	6 - 25	2.5 - 3.5	0.3 - 0.5	0.015 - 0.2
H3082	6290-2NFF	25 - 50	3.0 - 4.0	0.3 - 0.5	0.015 - 0.2
H3083	6290-3NFF	50 - 75	3.0 - 4.5	0.3 - 0.5	0.015 - 0.2
H3084	6290-4NFF	75 - 150	3.5 - 5.5	0.3 - 0.5	0.015 - 0.2
H3085	6290-5NFF	150 - 200	4.5 - 5.5	0.3 - 0.5	0.015 - 0.2
H3086	6290-6NFF	200 - 300	5.0 - 6.5	0.3 - 0.5	0.015 - 0.2

6290-NXPM Oxy-MAPP® and Oxy-Propylene Tip Chart



Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	OXYGEN (bar)	FUEL GAS Equal Pressure (bar)	FUEL GAS Low Pressure (bar)
H3182	6290-000NXPM	0 - 5	1.0 - 2.0	0.3 - 0.5	0.015 - 0.2
H3183	6290-00NXPM	5 - 10	1.5 - 2.0	0.3 - 0.5	0.015 - 0.2
H3184	6290-0NXPM	10 - 15	2.0 - 3.0	0.3 - 0.5	0.015 - 0.2
H3185	6290-1NXPM	15 - 25	2.5 - 3.5	0.3 - 0.5	0.015 - 0.2
H3186	6290-2NXPM	25 - 50	3.0 - 4.0	0.3 - 0.5	0.015 - 0.2
H3292	6290-3NXPM	50 - 75	3.0 - 4.5	0.3 - 0.5	0.015 - 0.2
H3293	6290-4NXPM	75 - 150	3.5 - 5.5	0.3 - 0.5	0.015 - 0.2
H3294	6290-5NXPM	150 - 200	4.5 - 5.5	0.3 - 0.5	0.015 - 0.2
H3295	6290-6NXPM	200 - 300	5.0 - 6.5	0.3 - 0.5	0.015 - 0.2

3690-P Oxy-Propane, Natural Gas Tip Chart



Unplated Shell

UK PART No	MODEL	METAL THICKNESS (mm)	OXYGEN (bar)	FUEL GAS (bar)	WHERE USED
H2027	3690-00P	0-6	1.0 - 2.0	0.35	36-2 Cutting Attachment
H2028	3690-0P	6-13	1.5 - 2.5	0.35	
H2029	3690-1P	13-25	2.0 - 3.5	0.35	
H2030	3690-2P	25-75	3.0 - 4.5	0.35	

6290 Oxy-Propane, Propylene, Natural Gas & MAPP® Gas Specialty Tip Chart



6290-NFW

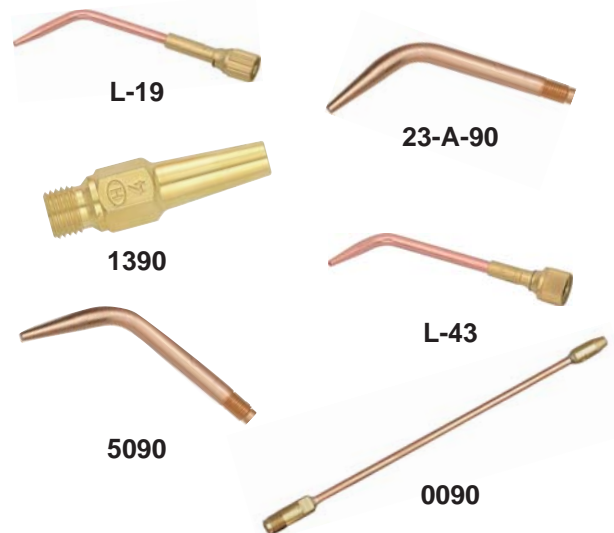
UK PART No	MODEL	APPLICATION	OXYGEN (bar)	FUEL GAS Equal Pressure (bar)	FUEL GAS Low Pressure (bar)	WHERE USED
H3090	6290-1GG	Gouging 3x6 mm wide	2.5	0.3 - 0.5	0.015 - 0.2	Recommended for Straight Cutting Torches
H3091	6290-2GG	Gouging 5x10 mm wide	3.5	0.3 - 0.5	0.015 - 0.2	
H3092	6290-3GG	Gouging 6x13 mm wide	3.5	0.3 - 0.5	0.015 - 0.2	
H3093	6290-4GG	Gouging 10x19 mm wide	4.0	0.3 - 0.5	0.015 - 0.2	
H3020	6290-2NFFR	Rivet cutting	3.0	0.3 - 0.5	0.015 - 0.2	

Cleaning Instructions: Use Tip Cleaner C-9

Acetylene Welding and Brazing Tips/Assemblies

UK PART No	Tips 23-A-90	UK PART No	Tips 5090	UK PART No	Tips 1390	UK PART No	Flexible Tips 0090	Thickness (mm)	EQUAL PRESSURE	
									OXYGEN (bar)	ACETYLENE (bar)
				H2179	1390-00			0 - 0.2	0.3 - 0.8	0.3 - 0.8
H2269	23-A-90-0	H2169	5090-0	H2180	1390-0			0.2 - 0.5	0.3 - 0.8	0.3 - 0.8
H2270	23-A-90-1	H2170	5090-1	H2181	1390-1	H2171	0090-1	0.5 - 1.0	0.3 - 0.8	0.3 - 0.8
		H2149	5090-2	H2182	1390-2				0.3 - 0.8	0.3 - 0.8
H2272	23-A-90-3	H2150	5090-3	H2183	1390-3	H2172	0090-3	1.0 - 2.0	0.3 - 0.8	0.3 - 0.8
H2273	23-A-90-4	H2152	5090-4	H2184	1390-4				0.3 - 0.8	0.3 - 0.8
H2274	23-A-90-5	H2153	5090-5	H2185	1390-5	H2173	0090-5	2.0 - 4.0	0.3 - 0.8	0.3 - 0.8
H2275	23-A-90-6	H2154	5090-6	H2186	1390-6	H2174	0090-6	4.0 - 6.0	0.3 - 0.8	0.3 - 0.8
H2276	23-A-90-7	H2155	5090-7	H2187	1390-7				0.3 - 0.8	0.3 - 0.8
H2277	23-A-90-8	H2156	5090-8	H2188	1390-8	H2175	0090-8	6.0 - 9.0	0.3 - 0.8	0.3 - 0.8
H2278	23-A-90-9	H2157	5090-9	H2189	1390-9			9.0 - 14.0	0.3 - 0.8	0.3 - 0.8
H2279	23-A-90-10	H2158	5090-10	H2190	1390-10			14.0 - 20.0	0.3 - 0.8	0.3 - 0.8
H2280	23-A-90-13							20.0 - 30.0	0.3 - 0.8	0.3 - 0.8
H2281	23-A-90-15							30.0 - 50.0	0.3 - 0.8	0.3 - 0.8

UK PART No	Assembly L-19	UK PART No	Assembly L-43	Thickness (mm)	LOW PRESSURE	
					OXYGEN (bar)	ACETYLENE (bar)
H2161	L-19-0	H2131	L-43-0	0.2-0.5	2.5	0.02
H2162	L-19-1	H2132	L-43-1	0.5-1.0	2.5	0.02
H2163	L-19-3	H2133	L-43-3	1.0-2.0	2.5	0.02
H2164	L-19-5	H2134	L-43-5	2.0-4.0	2.5	0.02
H2165	L-19-6	H2135	L-43-6	4.0-6.0	2.5	0.02
H2166	L-19-8	H2136	L-43-8	6.0-9.0	2.5	0.02
H2167	L-19-9	H2137	L-43-9	9.0-14.0	2.5	0.02
H2168	L-19-10	H2138	L-43-10	14.0-20.0	2.5	0.02
		H2139	L-43-13	20.0-30.0	2.5	0.02
		H2140	L-43-15	30.0-50.0	2.5	0.02



Tip Tubes for Separate Welding and Brazing Tips

UK PART No	HANDLE	MIXER	TIP TUBE/ADAPTER	TIP	WELDING ASSEMBLY
H2122	43-2	(H2087) E2-43	-	23-A-90 (13-15)	L-43
		(H2177) E-43	8593	1390	
		(H2177) E-43	4301-11+TH-119	0090	
		(H2177) E-43		23-A-90 (0-10)	
H2015 H2012	19-6 50-10	(H2082) H-19-2E	D-50-C TH-119	1390 0090 5090	L-19



**D-50-C
TIP TUBE**
UK PART No
H2023



**8593
TIP TUBE**
UK PART No
H2178



**4301-11
ADAPTER**
UK PART No
H2112



**TH-119
TWIN TIP HOLDER**
UK PART No
H2176

Acetylene Heating Tips and Assemblies



J - 63



1901-11
ADAPTER

UK PART No
H2093

UK PART No	HANDLE	MIXER	ADAPTER	HEATING TIPS PART NO.
H2122	43-2	(H2177) E-43	-	J-63-1
		(H2177) E-43		J-63-2
		(H2087) E2-43		J-63-3
		(H2087) E2-43		J-63-4
H2015 H2012	19-6 50-10	(H2082) H-19-2E	1901-11	J-63-1 J-63-2

UK PART No	HANDLE	MIXER	TIP TUBE	TIP
H2122	43-2	(H2177) E-43	8593	1390-HA
H2015/H2012	19-6/50-10	(H2022) H-19-2E	D-50-C	1390-HA



Handle
(page 24-28)

Mixer
(page 21)

Tube and Tip
Assembly

Heating Tips and Assemblies Data Chart



1390-HA

UK PART No	MODEL	OXYGEN & ACETYLENE "EQUAL PRESSURE"		FLOW (l/h)		APPROX. HEATING OUTPUT
		MAX. (bar)	MIN. (bar)	OXYGEN	ACETYLENE	(Kcal/h)
H2088	J-63-1	0.15 - 0.4	0.15 - 0.4	600 - 1100	600 - 1000	7450 - 13000
H2089	J-63-2	0.2 - 0.5	0.2 - 0.5	900 - 1550	850 - 1400	11100 - 18700
H2090	J-63-3	0.3 - 0.6	0.3 - 0.6	1550 - 2500	1400 - 2250	18500 - 29800
H2091	J-63-4	0.6 - 1.0	0.6 - 1.05	2500 - 4300	2250 - 3950	29800 - 52000
H2094	1390-HA	0.35	0.35	1100	1000	-

Acetylene Flame Cleaning Tips

HANDLE	MIXER	TIP TUBE/ADAPTER	TIP
(H2122) 43-2	(H2087) E2-43	2393+2357-3	RBA-43

Select Model 2393 tip tube and adapter from page 35.

Oxy-Acetylene RBA Flame Cleaning Heads Data Chart

UK PART No	MODEL	LENGTH (mm)	PRESSURE		FLOW	
			OXYGEN (bar)	ACETYLENE (bar)	OXYGEN (l/h)	ACETYLENE (l/h)
H2094	RBA-43-2	50	0.4 - 0.7	0.4 - 0.7	800 - 1130	700 - 900
H2095	RBA-43-4	100	0.7 - 0.9	0.7 - 0.9	1550 - 1650	1400 - 1500
H2096	RBA-43-6	150	0.8 - 1.0	0.8 - 1.0	1780 - 1820	1400 - 1650



RBA-43

Alternative Fuel Tips

1390-N, 5090-N & 0090-N Brazing Tips

2290-N & 1390-H Heating Tips



1390-H



2290-N

UK PART No	HANDLE	MIXER	TIP TUBE	1390-N TIPS
H2122	43-2	F-43 (H2086)	8593	1390-2N
				1390-3N
				1390-4N
				1390-5N
				1390-6N
				1390-7N
				1390-8N/1390-H
				1390-9N
				1390-10N
				1390-N/1390-H/ 5090-N
	19-6/50-10	-	H-19-2S	D 50-C

UK PART No	HEAVY DUTY HANDLE	MIXER	TIP TUBE/ ADAPTER	2290-N TIPS
H2122	43-2	(H2086) F-43 (H2074) B-43-N	2393+2357-3	2290-13N 2290-15N 2290-20N 2290-30N 2290-80N

Select Model 2393 and adapter tip tube from page 35.

UK PART No	HANDLE	MIXER	ADAPTER	TIP
H2122	43-2	B-43-1	4301-11	0090-2N
		B-43-3		0090-4N
		B-43-6		0090-6N
		B-43-8		0090-8N
H2015 H2012	19-6 50-10	(H2025) H-19-2S	-	0090-2N-4N-6N-8N



0090-N

1390-N/2290-N/0090-N/1390-H Tip Performance Data Chart

UK Part No	Tips 1390-N	UK Part No	Flexible Tips 0090-N	LOW PRESSURE		EQUAL PRESSURE		FLOW (L/h)	
				Oxygen (Bar)	Fuel Gas (Bar)	Oxygen (Bar)	Fuel Gas (Bar)	Oxygen	Fuel Gas
H2260	1390-2N	H2195	0090-2N	1.0	Min 0.15 Bar		Min 0.15 Bar	300	75
H2261	1390-3N			1.0	Min 0.15 Bar		Min 0.15 Bar	550	140
H2262	1390-4N	H2196	0090-4N	1.4	Min 0.15 Bar		Min 0.15 Bar	700	175
H2263	1390-5N			1.8	Min 0.15 Bar		Min 0.15 Bar	900	225
H2264	1390-6N	H2197	0090-6N	1.8	Min 0.15 Bar		Min 0.15 Bar	1100	275
H2265	1390-7N			2.1	Min 0.15 Bar		Min 0.15 Bar	1350	345
H2266	1390-8N	H2198	0090-8N	2.1	Min 0.15 Bar		Min 0.15 Bar	1500	375
H2267	1390-9N			2.5	Min 0.15 Bar		Min 0.15 Bar	1650	415
H2268	1390-10N			2.8	Min 0.15 Bar		Min 0.15 Bar	2000	500
H2282	1390-H			3.5	0.5	3.5	0.5-1.0	4200	1050
H2066	2290-13N			1.2	Min 0.15 Bar		Min 0.15 Bar	3400	850
H2067	2290-20N			1.2	Min 0.15 Bar		Min 0.15 Bar	6000	1500
H2069	2290-30N			2.3	Min 0.15 Bar		Min 0.15 Bar	8000	2000
H2070	2290-80N			2.3	Min 0.15 Bar		Min 0.15 Bar	9600	2400



1390-2N to 4N



1390-5N to 10N



5090-N

2290-H Heating Tips, 2393 Tip Tubes, RBP-43 Flame Cleaning Heads - Alternative Fuels Tips

2290-H



H-62-P

2290-H/H-62-P Performance Data Chart

UK PART No	MODEL	PRESSURE (bar)		FLOW (l/h)		APPROX. HEATING OUTPUT (Kcal/h)
		OXYGEN	FUEL GAS	OXYGEN	PROPANE	
H2081	2290-1H	1-2	0.5	4000-7000	1000-2000	22300 - 44600
H2082	2290-2H	2-3	0.5	5900-12800	1500-3200	33500 - 71400
H2083	2290-3H	2-5	1.0	8500-22900	2200-5700	49000 - 127100
H2084	2290-4H	3-6	1.0	14000-28400	3600-7100	80300 - 158000
H2085	2290-5H	4-8	1.0-2.0	17000-39700	4300-10000	96000 - 223000
H2098	H-62-1P	3.0	0.5	4000-7000	1000-2000	22300 - 44600
H2099	H-62-2P	3.5	0.5	5900-12800	1500-2200	38500 - 71400
H2100	H-62-3P	4.0	1.0	8500-22900	2200-5700	49000 - 127100

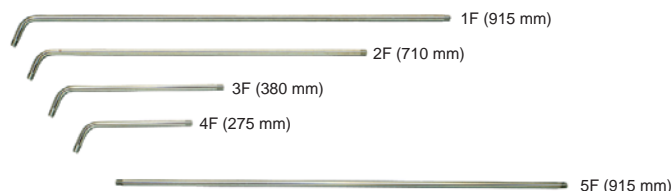
H-62-P to be used with 49.3F cutting attachment and 142F, 625F Style cutting torches.

2393-F Tip Tube Chart

UK PART No	MODEL	LENGTH (mm)	DESIGN
H2077	2393-1F	915	curved
H2075	2393-2F	710	curved
H2078	2393-3F	380	curved
H2076	2393-4F	275	curved
H2079	2393-5F	915	straight

NOTE: For extended tip life, use Tip Adapter 2357-3.

2393-F Tip Tube

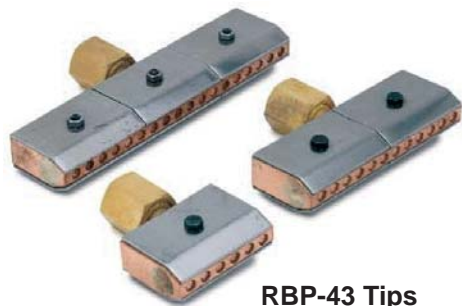


**2357-3
TIP ADAPTER**
UK PART No
H2111

UK PART No	HANDLE	MIXER	TIP TUBE/ADAPTER	TIP
H2122	43-2	(H2074) B-43-N (2086) F-43	2393+2357-3	2290-H RBP-43

RBP-43 Oxy-Propane, Propylene Based & Natural Gas Flame Cleaning Heads Data Chart

UK PART No	MODEL	LENGTH (mm)	OXYGEN PRESSURE (bar)	PROPANE PRESSURE (bar)	OXYGEN FLOW (l/h)	PROPANE FLOW (l/h)
H2094	RBP-43-2	50	0.5 - 1.0	0.5	2550 - 3400	700 - 1050
H2095	RBP-43-4	100	1.0 - 1.5	0.5 - 1.5	6350 - 8500	1850 - 2500
H2096	RBP-43-6	150	2 - 3	1.0 - 1.5	13900 - 18100	3000 - 4150



RBP-43 Tips

UK Cutting & Welding Kits



Portabrazo Kit & Trolley

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2319	19-6GB	H192GB	-	-	LW SWAGED 5,7,10,13	REGULATORS HOSE SET, FBA's, NOZZLE CLEANER, SPANNER, LIGHTER, GOGGLES, TROLLEY	CARTON

Portabrazo, Cut & Heat Kit & Trolley

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2333	19-6GB	H192GB H192E (Heat)	36-2	3690 00AC, ASC	LW SWAGED 1,3,5,7,10,13	REGULATORS HOSE SET, FBA's, NOZZLE CLEANER, SPANNER, LIGHTER, GOGGLES, D50C NECK, TROLLEY, 1390-HA (Heat Tip)	CARTON

Cuts up to 150 mm. Equal Pressure - Welds up to 3 mm (Acetylene)

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2301	543MX	E43MX	59-3MX	8290 3/64 ANM	TYPE 2/3 3,5,7,10	REGULATORS HOSE SET, FBA's, NOZZLE CLEANER, SPANNER, LIGHTER, GOGGLES	PLASTIC CARRY CASE

Cuts up to 75 mm. Equal Pressure - Welds up to 3 mm (Acetylene)

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2302	19-6GB	H192GB	36-2	3690 00AC, ASC	LW SWAGED 1,3,5,7,10	REGULATORS HOSE SET, FBA's, NOZZLE CLEANER, SPANNER, LIGHTER, GOGGLES	PLASTIC CARRY CASE

Cuts up to 75 mm. Equal Pressure - Welds up to 14 mm (Acetylene)

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2303	19-6GB	H192E	36-2	3690 00AC, ASC	1390 0,1,3,5,6,8,9	D50C NECK TUBE, NOZZLE CLEANER, SPANNER, LIGHTER, GOGGLES	PLASTIC CARRY CASE

UK Cutting & Welding Kits



Equal Pressure - Welds up to 20 mm (Acetylene)

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2304	19-6GB	H192E	-	-	1390 0,1,3,5,6, 8,9,10	D50C NECK TUBE	PLASTIC CARRY CASE

Cuts up to 150 mm. Equal Pressure - Welds up to 6 mm (Acetylene)

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2305	543MX	E43MX	59-3MX	8290 1/32 ANM 3/64 ANM	TYPE 2/3 1,3,5,7,10,13,18	NOZZLE CLEANER, SPANNER, LIGHTER	PLASTIC CARRY CASE

Equal Pressure - Welds up to 6 mm (Acetylene)

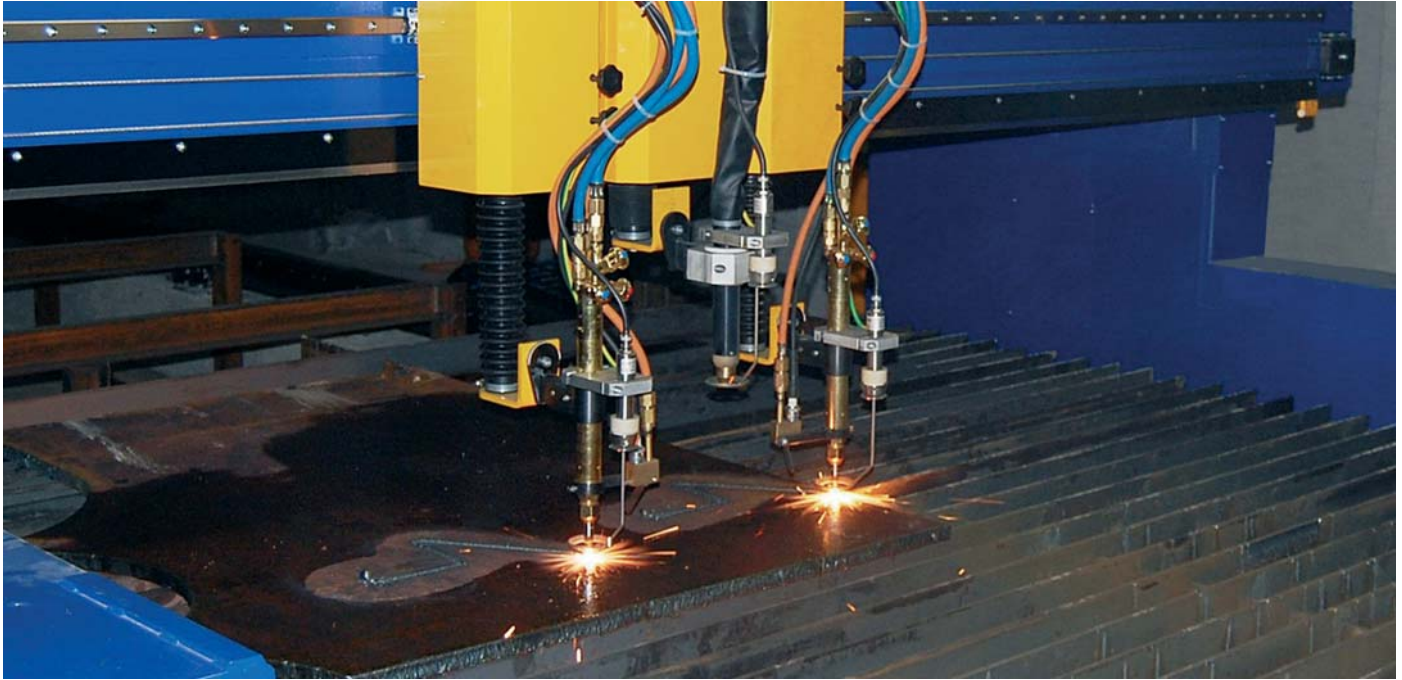
UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2306	19-6GB	H192GB	-	-	LW SWAGED 1,3,5,7,10,13,18	-	PLASTIC CARRY CASE

Cuts up to 75 mm. Equal Pressure - Welds up to 3 mm (Acetylene)

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2307	19-6GB	H192GB	36-2	3690 00AC, ASC	LW SWAGED 1,3,5,7,10,13	NOZZLE CLEANER, SPANNER, LIGHTER	PLASTIC CARRY CASE

Low Pressure - Propane Brazing

UK PART No	HANDLE	MIXER	CUTTING ATTACHMENT	CUTTING TIPS	WELDING TIPS	ACCESSORIES	PACKAGING
H2316	19-6GB	H192S	-	-	1390N 2,3,5,6,8,9,10	D50C NECK TUBE	PLASTIC CARRY CASE



Model 133/198/98 Machine Torches

Harris machine cutting torches are designed to handle all types of machine cutting applications. Rugged and dependable, these torches provide up to 380 mm cutting capacity. Harris machine cutting torches are available in two tube and three tube design for all fuel gases at pressures as low as 0.015 bar.

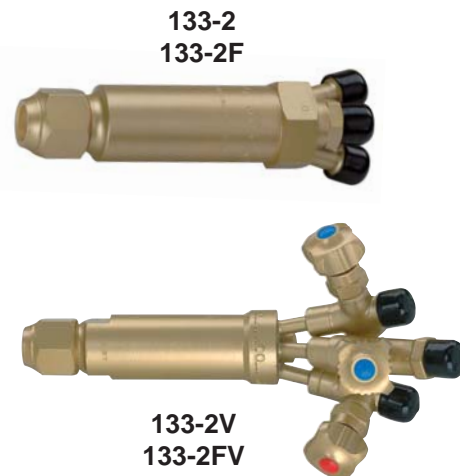
General Features:

- ▶ Solid head for maximum strength
- ▶ Standard 32 mm or 35 mm diameter barrel
- ▶ All torches have inlet threads 9/16x18 UNF
- ▶ Use with 6290 machine cutting tips (see page 40-41)

Model 133-2/133-2F

Features:

- ▶ Three tube valveless design for pipe bevelling, multiple bevelling and similar applications
- ▶ Cutting capacity up to 200 mm



Model 133-2V/133-2FV

Features:

- ▶ Three tube with 3 valves.
- ▶ Cutting capacity up to 200 mm

LOW PRESSURE "F" INJECTOR TYPE TORCHES (FOR MAXIMUM PERFORMANCE WITH ALTERNATIVE FUEL)					
UK PART No	MODEL	Style	Weight (Kg)	Length (mm)	barrel Ø (mm)
H3113	133-2F	3 tube	0.68	65	30
-	133-2F-28	3 tube	0.63	65	28
H3095	133-2FV	3 tube	1.07	65	30
H3096	133-2FV-28	3 tube	1.02	65	28

LOW PRESSURE TORCHES (FOR ACETYLENE)					
UK PART No	MODEL	Style	Weight (Kg)	Length (mm)	barrel Ø (mm)
H3152	133-2	3 tube	0.68	65	30
-	133-2-28	3 tube	0.62	65	28
-	133-2V	3 tube	1.05	65	30
-	133-2V-28	3 tube	1.02	65	28

Model 198-2T/198-2TF

Features:

- ▶ Quick opening cutting oxygen valve for immediate full flow
- ▶ Separate preheat and cutting oxygen valves for high and low preheat control
- ▶ Cutting capacity up to 380 mm
- ▶ Use with 6290 cutting tips (see page 40-41)

Model 198-2/198-2F

Features:

- ▶ Cutting capacity up to 200 mm
- ▶ One inlet connection for oxygen and cutting oxygen

Model 198-4/98-4

Features:

- ▶ Same characteristics as 198-2T but valveless



**198-2T
198-2TF**



**198-2
198-2F**



198-2TR (with rack)



**198-4
98-4**

LOW PRESSURE TORCHES (FOR ACETYLENE)					
UK PART No	MODEL	Style	Weight (Kg)	Length (mm)	Barrel Ø (mm)
-	198-2	2 tube	1.30	250	32
-	198-2-30	2 tube	1.18	250	30
H3159	198-2-35	2 tube	1.39	250	35
H3114	198-2-35R	2 tube & rack	1.44	250	35
-	198-2A	2 tube	1.62	460	32
H3107	198-2T	3 tube	1.32	250	32
-	198-2T-30	3 tube	1.20	250	30
-	198-2T-30R	3 tube & rack	1.29	250	35
-	198-2TA	3 tube	1.67	460	32
-	198-2TA-30	3 tube	1.55	460	30
-	198-2TA-35	3 tube	1.78	460	35
H3165	198-2TA-35R	3 tube & rack	1.90	460	35
-	198-2TAR	3 tube & rack	1.75	460	32
-	198-2TR	3 tube & rack	1.38	250	32
-	198-4B	3 tube G 1/4"	0.65	110	32
H3120	98-4B	3 tube G 1/4"	0.73	110	35
H3170	1982TRH			380	

LOW PRESSURE "F" INJECTOR TYPE TORCHES (FOR MAXIMUM PERFORMANCE WITH ALTERNATIVE FUELS)					
UK PART No	MODEL	Style	Weight (Kg)	Length (mm)	barrel Ø (mm)
H3180	198-2F	2 tube	1.28	250	32
H3161	198-2F-35	2 tube	1.38	250	35
H3115	198-2F-35R	2 tube & rack	1.44	250	35
-	198-2FR	2 tube & rack	1.34	250	32
-	198-2TAF	3 tube	1.64	460	32
-	198-2TAF-30	3 tube	1.55	460	30
H3118	198-2TAF-35	3 tube	1.78	460	35
H3119	198-2TAF-35R	3 tube & rack	1.90	460	35
H3162	198-2TAFR	3 tube & rack	1.76	460	32
H3109	198-2TF	3 tube	1.33	250	32
H3111	198-2TF-30	3 tube	1.20	250	30
H3124	198-2TF-30R	3 tube & rack	1.25	250	30
-	198-2TF-35	3 tube	1.43	250	35
H3117	198-2TF-35R	3 tube & rack	1.49	250	32
	198-2TFR	3 tube & rack	1.39	250	32
H3112	198-4BF	3 tube	0.65	110	32
H3116	98-4BF	3 tube G 1/4"	0.73	110	35
H3164	198-2TFRH	3 tube & rack		320	32

Machine Cutting Tips

**6290-VVC
Plated Shell**



6290-NH



- ▶ Minimizes kerf
- ▶ Increased cutting speeds, reduces heat input
- ▶ High quality machine cuts, reduces afterwork
- ▶ Used with low cost fuel gases

6290-VVC High Speed Oxy-Propane Cutting Tip Chart - Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	CUTTING SPEED (mm/min)	CUTTING OX PRESSURE (bar)	PREHEAT OX PRESSURE (High ¹ - Low) (bar)	CUTTING OX FLOW (l/h)	PREHEAT OX FLOW (High - Low) (l/h)	PREHEAT FUEL FLOW (High - Low) (l/h)	HEATING POWER (High - Low) (Kcal/h)	KERF WIDTH (mm)
H3131	6290-5/0VVC	1 - 4	750 - 550	4.0	0.7 - 0.4	650	1410 - 900	350 - 230	7800 - 5100	1.3
H3132	6290-4/0VVC	4 - 6	700 - 520	2.5	1.0 - 0.5	1130	1410 - 900	350 - 230	7800 - 5100	1.5
H3133	6290-3/0VVC	6 - 9	650 - 480	5.0	2.5 - 0.7	2260	2800 - 1200	700 - 300	15600 - 6700	1.8
H3134	6290-00VVC	9 - 12.5	630 - 450	5.0	2.5 - 0.7	2540	2800 - 1200	700 - 300	15600 - 6700	1.8
H3135	6290-0VVC	12.5 - 20	600 - 400	6.0	2.5 - 0.7	3530	2800 - 1200	700 - 300	15600 - 6700	2.0
H3136	6290-0½VVC	20 - 35	550 - 360	7.0	2.5 - 0.7	4000	2800 - 1200	700 - 300	15600 - 6700	2.0
H3137	6290-1VVC	35 - 60	480 - 220	7.0	2.5 - 0.7	5560	2800 - 1200	700 - 300	15600 - 6700	2.3
H3139	6290-1½VVC	60 - 75	310 - 200	6.5	2.5 - 0.7	7070	2800 - 1200	700 - 300	15600 - 6700	2.8
H3141	6290-2VVC	75 - 125	280 - 190	7.0	2.5 - 0.7	8000	2800 - 1300	700 - 330	15600 - 7400	3.0
H3142	6290-2½VVC	125 - 150	200 - 160	6.5	2.5 - 0.7	11170	2800 - 1300	700 - 330	15600 - 7400	3.3
H3143	6290-3VVC	150 - 175	180 - 150	7.0	2.5 - 0.7	12000	2800 - 1300	700 - 330	15600 - 7400	3.5
H3144	6290-4VVC	175 - 200	180 - 150	6.5	2.5 - 0.7	14850	3000 - 1300	750 - 330	16700 - 7400	4.0
H3145	6290-5VVC	200 - 225	150 - 130	6.0	2.8 - 0.7	16410	3000 - 1510	750 - 380	16700 - 8500	5.0
H3146	6290-5½VVC	225 - 250	130 - 110	6.0	2.8 - 0.7	16980	3000 - 1630	750 - 410	16700 - 9100	6.4
H3147	6290-5NH	225 - 250	130 - 110	4.0	2.8 - 0.7	16980	3000 - 1880	750 - 470	16700 - 10500	6.4
H3148	6290-6NH	250 - 275	130 - 110	4.0	2.8 - 0.7	19520	3000 - 1880	750 - 470	16700 - 10500	6.4
H3149	6290-7NH	275 - 300	120 - 100	4.5	3.5 - 0.7	23340	3580 - 2510	900 - 630	20100 - 14000	6.4
H3150	6290-8NH	300 - 380	110 - 90	4.5	3.5 - 0.7	26170	3580 - 2510	900 - 630	20100 - 14000	7.6

(1) For a fast start, necessary when performing piercing and/or cutting thickness over 200 mm., use "high preheat".
For thickness up to 200 mm., switch from high to low preheat - just cut, it has started. - All pressures are measured at torch inlet. - Use minimum 0.3 (bar) fuel gas pressure for equal pressure torches. - Use maximum 0.2 (bar) fuel gas pressure for injector equipment.

6290-VVC High Speed Oxy-Methane and Natural Gas Cutting Tip Chart - Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	CUTTING SPEED (mm/min)	CUTTING OX PRESSURE (bar)	PREHEAT OX PRESSURE (High ¹ - Low) (bar)	CUTTING OX FLOW (l/h)	PREHEAT OX FLOW (High - Low) (l/h)	PREHEAT FUEL FLOW (High - Low) (l/h)	HEATING POWER (High - Low) (Kcal/h)	KERF WIDTH (mm)
H3131	6290-5/0VVC	1 - 4	610 - 510	3.0	1.0 - 0.6	420	1410 - 850	710 - 430	6200 - 3700	1.3
H3132	6290-4/0VVC	4 - 6	560 - 510	3.5	1.0 - 0.7	1130	1410 - 1000	710 - 500	6200 - 4400	1.5
H3133	6290-3/0VVC	6 - 9	560 - 450	5.0	2.5 - 0.7	2260	2540 - 1000	1270 - 500	11000 - 4400	1.8
H3134	6290-00VVC	9 - 12.5	510 - 460	5.0	2.5 - 0.7	2540	2540 - 1000	1270 - 500	11000 - 4400	1.8
H3135	6290-0VVC	12.5 - 20	460 - 330	6.5	2.5 - 0.7	3530	2540 - 1000	1270 - 500	11000 - 4400	2.0
H3136	6290-0½VVC	20 - 35	410 - 350	7.0	2.5 - 0.9	4000	2540 - 1130	1270 - 570	11000 - 5000	2.0
H3137	6290-1VVC	35 - 60	380 - 330	7.0	2.5 - 0.9	5560	2540 - 1130	1270 - 570	11000 - 5000	2.3
H3139	6290-1½VVC	60 - 75	300 - 230	7.0	2.5 - 0.9	7070	2540 - 1130	1270 - 570	11000 - 5000	2.8
H3141	6290-2VVC	75 - 125	300 - 180	7.0	2.5 - 0.9	9000	2540 - 1130	1270 - 570	11000 - 5000	3.0
H3142	6290-2½VVC	125 - 150	200 - 150	7.0	2.5 - 0.9	11170	2540 - 1130	1270 - 570	11000 - 5000	3.3
H3143	6290-3VVC	150 - 175	180 - 125	7.0	2.5 - 0.9	12000	2830 - 1130	1420 - 570	12400 - 5000	3.5
H3144	6290-4VVC	175 - 200	180 - 125	7.0	2.5 - 0.9	14850	2830 - 1130	1420 - 570	12400 - 5000	4.0
H3145	6290-5VVC	200 - 225	150 - 100	6.5	2.8 - 1.2	16410	2830 - 1510	1420 - 760	12400 - 6600	5.0
H3146	6290-5½VVC	225 - 250	125 - 100	6.5	2.8 - 1.3	16980	2830 - 1630	1420 - 820	12400 - 7100	6.4
H3147	6290-5NH	225 - 250	125 - 100	4.0	2.8 - 1.5	16980	2830 - 1880	1420 - 940	12400 - 8200	6.4
H3148	6290-6NH	250 - 275	120 - 100	4.0	2.8 - 1.5	19520	2830 - 1880	1420 - 940	12400 - 8200	6.4
H3149	6290-7NH	275 - 300	110 - 100	4.5	3.5 - 2.0	23340	2830 - 2510	1420 - 1260	12400 - 11000	6.4
H3150	6290-8NH	300 - 380	100 - 75	4.5	3.5 - 2.0	26170	2830 - 2510	1420 - 1260	12400 - 11000	7.6

(1) For a fast start, necessary when performing piercing and/or cutting thickness over 200 mm., use "high preheat".
For thickness up to 200 mm., switch from high to low preheat - just cut, it has started. - All pressures are measured at torch inlet. - Use minimum 0.3 (bar) fuel gas pressure for equal pressure torches. - Use maximum 0.2 (bar) fuel gas pressure for injector equipment.

Machine Cutting Tips

**6290-VAX
Plated Shell**



**6290-VPM
Plated Shell**



- ▶ Minimizes kerf
- ▶ Increased cutting speeds, reduces heat input
- ▶ High quality machine cuts, reduces afterwork
- ▶ Used with low cost fuel gases

6290-NHM



6290-VAX High Speed Oxy-Acetylene Cutting Tip Chart - Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	CUTTING SPEED (mm/min)	CUTTING OX PRESSURE (bar)	CUTTING OX FLOW (l/h)	PREHEAT OX FLOW (l/h)	ACETYLENE FLOW (l/h)	HEATING POWER (Kcal/h)
H3153	6290-1VAX	0 - 8	650	2.5 - 4.0	850 -1250	400	350	4740
H3154	6290-2VAX	8 - 15	600	5.0	2400	450	420	5690
H3155	6290-3VAX	15 - 35	550	7.0	4000	500	440	5960
H3156	6290-4VAX	35 - 75	450	7.0	5000	580	500	6780
H3157	6290-5VAX	75 - 150	300	5.0	9000	660	600	8130
H3158	6290-6VAX	150 - 200	150	6.5	13500	600	800	10840

Use maximum 0.2 (bar) fuel gas pressure for injector equipment
Use minimum 0.3 (bar) fuel gas pressure for equilibrated pressure torches

6290-VPM High Speed Oxy-MAPP®, Tetrene and Propylene Cutting Tip Chart - Plated Shell

UK PART No	MODEL	PLATE THICKNESS (mm)	CUTTING SPEED (mm/min)	CUTTING OX PRESSURE ¹ (bar)	PREHEAT OX PRESSURE (High - Low) (bar)	PREHEAT OX FLOW (Low Pressure) (l/h)	CUTTING OX FLOW (l/h)	PREHEAT FUEL FLOW ² (l/h)	HEATING POWER (Low) (Kcal/h)	KERF WIDTH (mm)
H3190	6290-0VPM	1 - 4	750	3.0	0.8 - 0.5	600	810	300	6300	1.3
H3191	6290-1VPM	4 - 8	700	3.5	0.8 - 0.5	1200	810	300	6300	1.5
H3192	6290-2VPM	8 - 15	620	5.0	1.7 - 0.5	2400	840	330	6930	1.8
H3193	6290-3VPM	15 - 35	550	7.0	1.7 - 0.5	4200	900	360	7560	2.0
H3194	6290-4VPM	35 - 75	450	7.0	1.7 - 0.7	5100	1020	400	8390	2.5
H3195	6290-5VPM	75 - 150	300	7.0	1.7 - 0.7	8400	1080	420	8820	3.0
H3196	6290-6VPM	150 - 200	150	7.0	2.0 - 0.7	14400	1140	450	9450	4.0
H3197	6290-7NHM	200 - 300	125	4.0	0.7 - 2.5	22300	1140	450	9450	6.9

(¹) Cutting oxygen pressure are measured at torch inlet
(²) Preheat flows are calculated for propylene/oxygen at 2.6/1 ratio
Use minimum 0.3 (bar) fuel gas pressure for equal pressure torches
Use maximum 0.2 (bar) fuel gas pressure for injector equipment

CLEANING INSTRUCTIONS: The wire brush included with tip cleaner E-9 should be used for cleaning preheat slots and for removing spatter from the tip face. When cleaning the preheat slots, do not brush across the slots as this motion can damage the slots. Always brush along the length of the slot to remove dirt or spatter.



H3125

**E-9 TIP
Two Piece Cleaners**

Machine Cutting Accessories



TH-98 Twin Tip Adapter

Adjustable twin adapter for 2 cuts simultaneously using one torch. Adjust from 30 mm to 305 mm wide (special widths available on request) "O" ring sealed. Large capacity (up to 200 mm to each tip).

H3122 - TH98 300mm

H3127 - TH98 60mm



BV-98-2 Beveling Head

Use with natural gas or propane only. Increases speed and quality of bevel cuts. 6290 cutting tips can be used. Use specially designed 1390-3H replacement heating tip for optimum results.

H3123



96-DC Oxygen Saver

Dual control oxygen saver for 3 hose torches. Fits to oxygen line. Moving the lever adjusts the flame from an extreme flame for piercing and quick starts to a soft small flame for economy and quality. Advantages are reduced oxygen and gas consumption, very high cut quality, square edges, slag-free cuts with fast starts. Not recommended for acetylene.

H3167



C-98-V2 Flash Check Valve for Cutting Oxygen Inlet On Three Hose Torches

Stops reverse flow of gases. Recommended when cutting oxygen valve is remote from torches.

Cutting capacity up to 200 mm



S-98-C Adjustable Tip Adapter

Allows adjustment of tip to any angle without moving the torch "O" ring sealed. Large capacity, (up to 200 mm) calibrated 90°.

H3121



88-6 Check Valves

Reverse flow check valves for preheat only. Help prevent dangerous reverse flow mixing of gas in hose and regulators (see page 47 for complete check valve information).

Machine Cutting Guide

CORRECT CUTTING



PERFECT CUT - Regular surface with slightly sloping drag lines marks a perfect cut. A slight amount of scale at the top of the cut is caused by preheat flames and is easily removed. This surface can be used for many purposes without machining.

PRODUCTION CUT - Moderately sloping drag lines and a reasonably smooth surface characterize a production cut. For production operations a cut of this type represents the best combination of quality and economy.

DIRTY TIP



DIRTY TIP - Dirt or scale in the tip will deflect the oxygen stream and cause one or more of the following problems: Excess slag on the steel, an irregular cut surface, pitting and undercutting.

CUTTING SPEED



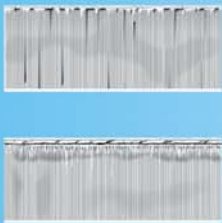
EXTREMELY FAST - Rake angle of drag lines shows extremely fast cutting speed. Top edge is good and cut face is smooth. However, slag adheres to the bottom side and there is danger of losing the cut. Not enough time is allowed for slag to blow out of the kerf. Cut face often slightly concave.

EXTREMELY SLOW - Pressure marks indicate too much oxygen for cutting conditions. Either the tip is too big, cutting oxygen pressure too high, or speed is too slow as shown by a rounded or beaded top edge as in this case. As oxygen volume nears correct proportions, pressure marks appear closer to the bottom edge until they finally disappear.

SLIGHTLY TOO FAST - Drag lines incline backwards, but a "drop cut" is still attained. Top edge is good, cut face is smooth and slag free. Quality is satisfactory for much production work.

SLIGHTLY TOO SLOW - Cut is high quality although there is some surface roughness caused by vertical drag lines. Top edge is usually slightly beaded. Quality is generally acceptable, but faster speeds are more desirable.

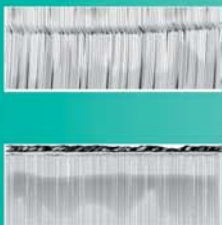
TIP DISTANCE



TOO CLOSE - Grooves and deep drag lines caused by unstable cutting action. Part of preheat cone burns inside kerf where normal gas expansion deflects oxygen cutting stream.

TOO HIGH - Top edge is beaded or rounded, cut face is not smooth and often is slightly beveled when pre-heat effectiveness is partially lost due to the tip being held too high. Cutting speed is reduced because of the danger of losing the cut.

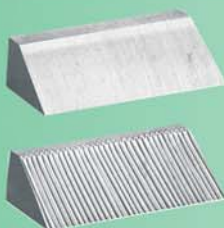
GAS ADJUSTMENT



TOO MUCH CUTTING OXYGEN - Pressure marks are caused by too much cutting oxygen. When more oxygen is supplied than can be consumed in oxidation, the remainder goes around the slag creating gouges, or pressure marks. Correct this fault by lowering cutting oxygen pressure, increasing speed, or using a smaller tip. As oxygen volume nears correct proportion, pressure marks appear closer to the bottom edge until they finally disappear.

TOO HOT PREHEAT - Rounded top edge caused by too much preheat. Excess preheat does not increase cutting speed. It only wastes gases.

WHAT TO LOOK FOR IN BEVEL CUTTING



GOOD QUALITY - Top edge is excellent and cut face extremely smooth. Slag should be easy to remove and the cut part dimensionally accurate. Cutting speed is slower than vertical cutting because preheat effect is partially deflected from plate.

POOR QUALITY - Gouging is the most common fault, and is caused by either speed too fast or pre-heat flame too mild. Another fault is a rounded top edge, caused by too much preheat indicating excessive gas consumption.



Harris Plus Gas Cutting Machine

- ▶ Straight line & circle cutting
- ▶ Stepless drive system, maintaining constant travel speed at high temperatures
- ▶ Light Weight – 9.5kg
- ▶ Modular 1800mm straight rail track
- ▶ Circle cutting rails available
- ▶ H3320 Harris Plus (110v) package including Harris 198-4BF (inc rack) Propane injector cutting torch, Torch holder assembly, 3 x VVC nozzles, Oxygen & Propane hose set, Gas distributor and Power cable (Straight Rail not included)
- ▶ H3322 Harris Straight Rail – 1800mm

Acetylene cutting option and alternative voltage options available upon request.



Harris Super Gas Cutting Machine

- ▶ Double Cone Step less drive system, maintaining constant travel speed at high temperatures, greater speed control
- ▶ Light Weight – 11.5kg
- ▶ Travel speed 80-800mm/min
- ▶ Suitable for plasma cutting and welding
- ▶ Plate rider height adjustment option
- ▶ H3321 Harris Plus (110v) package including Harris 198-4BF Propane injector cutting torch, Torch holder assembly, 3 x VVC nozzles, Oxygen & Propane hose set, Gas distributor and Power cable (Straight Rail not included)
- ▶ H3322 Harris Straight Rail – 1800mm

Acetylene cutting option and alternative voltage options available for both machines upon request.

Flashback Arrestors

- ▶ Prevent reverse flow of gases with built-in check valve
- ▶ Extinguish flashback fire with sintered metal filter
- ▶ Thermal cut-off which positively shuts off the gas in case of hose fire, burn or repeated flashbacks (only T version)
- ▶ Pressure operated cut-off which positively shuts off the gas when pressure exceeds (only 3T version)



H1133-H1134

Regulator type - I88-T

UK PART No	FUEL GAS	MAX FLOW l/h	MAX PRESSURE (bar) *				INLET THREAD	OUTLET THREAD
			OX	AC	LPG	H ₂		
H1134	Fuel gas	30.000	-	1.5	5	3.5	3/8"-BSPF LH	3/8" BSPM LH
H1133	Ox	100.000	15	-	-	-	3/8"-BSPF RH	3/8" BSPM RH

*1 bar=100 kPa

Regulator type - I88-3T



H1308 - H1307

UK PART No	FUEL GAS	MAX FLOW l/h	MAX PRESSURE (bar) *				INLET THREAD	OUTLET THREAD
			OX	AC	LPG	H ₂		
H1308	Fuel gas	60.000	-	1.5	5	3.5	3/8"-BSPF LH	3/8" BSPM LH
H1307	Ox	180.000	15	-	-	-	3/8"-BSPF RH	3/8" BSPM RH

*1 bar=100 kPa

Torch Type



188-GG (L & R)

UK PART No	MODEL	FUEL GAS	MAX FLOW l/h	MAX PRESSURE (bar) *				INLET THREAD	OUTLET THREAD
				OX	AC	LPG	H ₂		
H1297	188-GGGBL	Fuel gas	20.000	-	1.5	5	3.5	3/8" BSPM LH	3/8"- BSPF LH
H1296	188-GGGBR	Ox	65.000	15	-	-	-	3/8" BSPM RH	3/8"- BSPF RH
H1295	188-GGGL	Fuel gas	20.000	-	1.5	5	3.5	1/4" BSPM RH	1/4"- BSPF LH
H1294	188-GGGR	Ox	65.000	15	-	-	-	1/4" BSPM RH	1/4"- BSPF RH

*1 bar=100 kPa

Check Valves

- ▶ Torch type
- ▶ Help prevent dangerous reverse flow mixing of gas in the hose
- ▶ Compact light weight design add extra operator safety



88-6CVT (L&R)

UK PART UK	MODEL	FUEL GAS	MAX PRESSURE (bar) *				INLET THREAD	OUTLET THREAD
			OX	AC	LPG	H ₂		
H2241	88-3SVL	Fuel gas	-	1.5	5	20	1/4" BSPM LH	1/4"- BSPF LH
H2240	88-3SVR	Ox	20	-	-	-	1/4" BSPM RH	1/4"-BSPF RH
H4017	88-6CVTL	Fuel gas	-	1.5	5	20	9/16"-18-UNF-2A-LH	9/16"-18-UNF-2B-LH
H4018	88-6CVTR	Ox	20	-	-	-	9/16"-18-UNF-2A-RH	9/16"-18-UNF-2B-RH
H2191	88-6GBL	Fuel gas	-	1.5	5	20	3/8" BSPM LH	3/8"-BSPF LH
H2190	88-6GBR	Ox	20	-	-	-	3/8" BSPM RH	3/8"-BSPF RH

*1 bar=100 kPa

Quick Action Couplings

- ▶ Long lasting stainless steel pin connection
- ▶ Automatic gas cut-off to positively shut off the gas supply when disconnected
- ▶ Durable brass and stainless steel construction
- ▶ Manufactured in accordance with EN561 & ISO7289



UK PART No	MODEL	DESCRIPTION	CONNECTION TYPE	TYPE	
H4354	CPL6	Male	Hose connection Ø 1/4" (6 mm)	Hose	
H4355	CPR6				
H4356	CPL8		Hose connection Ø 5/16" (8 mm)		
H4357	CPR8				
H4348	CPL		Threads 9/16"-18-UNF-2B-LH		Torch
H4349	CPR		Threads 9/16"-18-UNF-2B-RH		
H4358	CPLGB		Threads 3/8"-BSPF LH		
H4379	CPRGB		Threads 3/8"-BSPF RH		
H4351	QACL6	Female	Hose connection Ø 1/4" (6 mm)	Hose	
H4360	QACR6				
H4361	QACL8		Hose connection Ø 5/16" (8 mm)		
H4360	QACR8				
H4362	QACL10		Hose connection Ø 3/8" (10 mm)		
H4363	QACR10				
H4364	QACLGB	Threads 3/8"-BSPF LH	Regulator		
H4365	QACRGB	Threads 3/8"-BSPF RH			

Converters



38-2GBL

38-2GBR

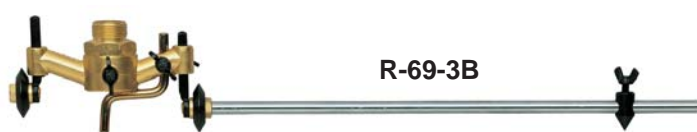
UK PART No	MODEL	FROM (FEMALE)	TO (MALE)
H4001	38-2GBL	9/16"-18-UNF-3B-LH	3/8" BSPM LH
H4002	38-2GBR	9/16"-18-UNF-3B-RH	3/8" BSPM RH
H4005	38-2GR	9/16"-18-UNF-3B-RH	1/4" BSPM RH
H4006	38-4GL	9/16"-18-UNF-3B-LH	1/4" BSPM LH

Tip Nuts



UK PART. N°	CUTTING TORCHES / CUTTING ATTACHMENTS	TIPS
H2117	133, 142, 198, 49-3, 62-5, 73-3MX	6290
H2020	36-2	3690
H2115	59-3MX, 242NMGB	8290

Roller Guides & Circle Cutting Attachments



UK PART No	MODEL	ANGLE	CONNECTION FOR TIPS	CUTTING ATTACHMENTS / CUTTING TORCHES
H2050	I-69-6	45°-135°	6290	142, 62-5, 49-3, 73-3MX
H2021	I-69-7		3690	36-2
H2116	R-69-3B	90°	6290	142, 62-5, 49-3, 73-3MX
H2114	R-69-4C		8290	242NMGB, 59-3MX

Tip Cleaners

(H2160) C-9 Calibrated tip cleaner for hand cutting tips

(H3125) E-9 Calibrated tip cleaner for machine cutting tips

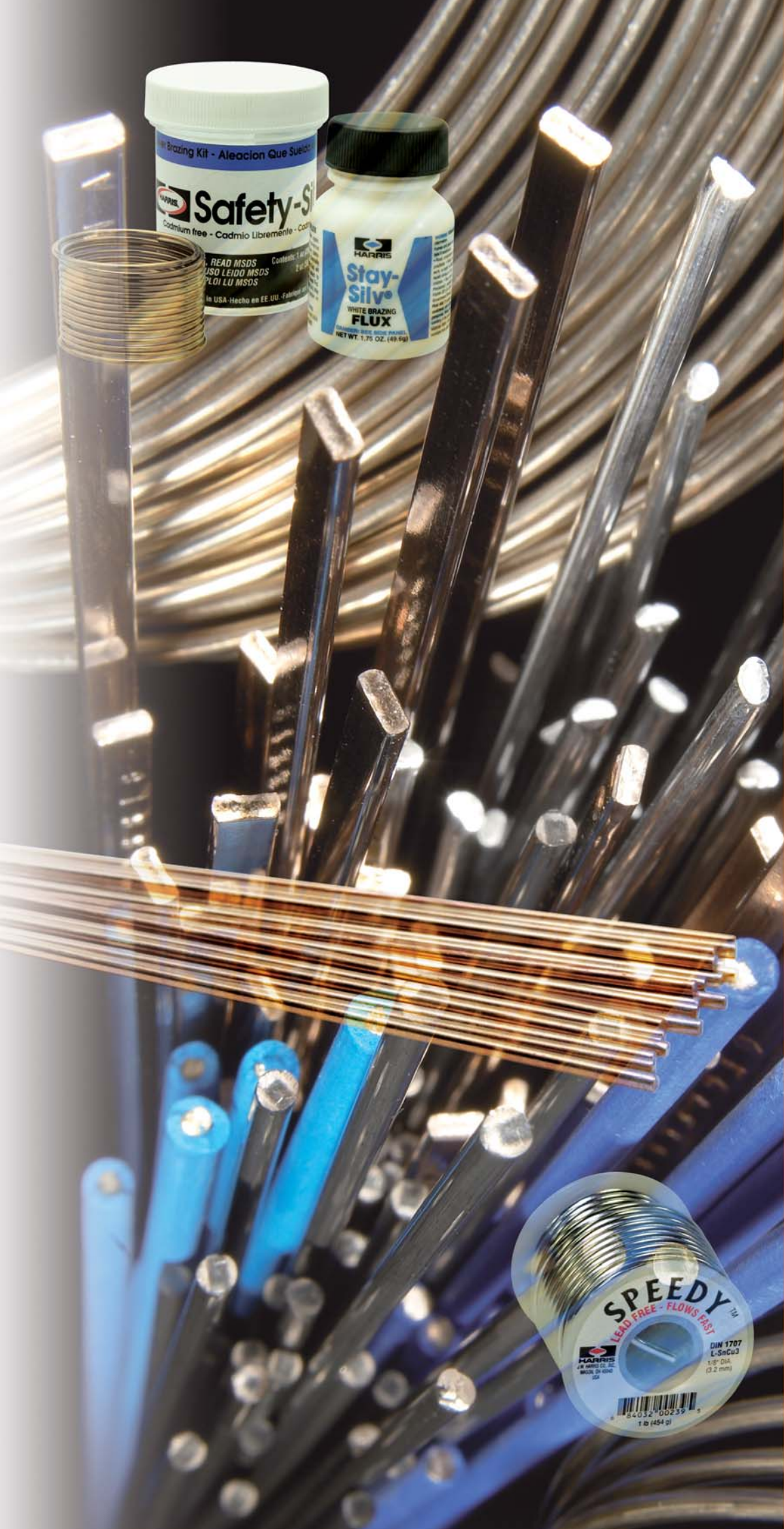


Welding & Cutting Hoses

Hoses highly resistant to abrasion and flame
Hoses conform to EN 559
Fitted lengths conform to EN 1256

Available in
6 mm, 8 mm and 10 mm diameter,
Oxygen, Acetylene and Propane.





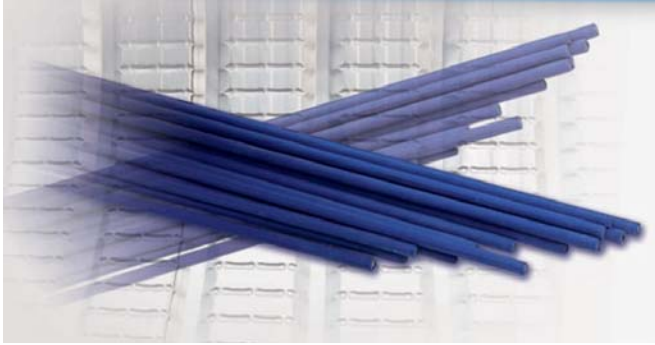
BRAZING CONSUMABLES

SPEEDY
LEAD FREE - FLOWS FAST
DIN 1707
L-SnCu3
1/8" DIA.
(3.2 mm)
1 lb (454 g)

FORMATS

The Harris Alloys are available in different formats

- ▶ Wires
- ▶ Strips
- ▶ Rods / flux coated rods
- ▶ Spools
- ▶ Rings
- ▶ Additional items available upon request



The Harris high silver brazing alloys are cadmium free. Only the purest metals are used, and precision production procedures ensure consistency in product quality and performance. Harris provides alloys with a silver percentage included between 20 and 60 %. They are free flowing with unequalled capillary performance and deep penetration. Ductility is high, corrosion resistance is suitable for all chemical applications offering high elongation properties. Suitable for use in the food processing industry.



PHOS-COPPER BRAZING ALLOYS

Phos/copper alloys are used to braze copper to copper and copper to brass. The phosphorus content in these alloys make them self-fluxing on copper. The Harris Products Group is the brazing industries forerunner in developing the technology to control phosphorus content. This controls alloy melting temperatures so exactly, that brazing operators no longer need to make temperature adjustments from one batch of filler metals to the next. Operators know that with Harris alloys, the result will be the same with every batch, every time. Harris can provide phos-copper brazing alloys with a silver percentage between 2 and 18 %.



LEAD FREE SOLDERS

Extremely versatile, the Harris silver-bearing solders are widely used throughout the industry as a better than-brazing method in many situations. The important advantage of these solders is the greater strength of the overall component. After joining its lower working temperatures eliminate the weakening of the base metals caused by annealment from high brazing heat. The result is stronger and more economical. These alloys range in temperature from 430°F to 535°F



BRAZING AND SOLDERING FLUXES

The use of fluxes is extremely important for a perfect metallurgical bond between base metal and filler metal for maximum strength. To ensure the best connections, Harris produces a wide variety of flux products designed for specific applications throughout a number of different industries.

HARRIS FILLER METAL SELECTION CHART HIGH SILVER ALLOYS & FLUXES

Additional alloys and sizes not listed may be available upon request.

METAL TO BE JOINED	PART N°	DESCRIPTION	Ag% kg	SPECIFICATIONS	SOLIDUS C°	LIQUIDUS C°	FLUIDITY RATING	FLUXES
HIGH SILVER ALLOYS (CADMIUM BEARING) – SUBJECT TO AVAILABILITY								
Steel, Nickel and Copper Alloys	JWH0151	L-AG20CD 1,5 X 500 mm - Flux Coated	20	EN 1044 : AG 309	605	765	4	Stay-Silv® White if required
	JWH0456	L-AG20CD 1,5 X 500 mm	20	EN 1044 : AG 309	605	765	4	
	JWH0411	L-AG20CD 2,0 X 500 mm - Flux Coated	20	EN 1044 : AG 309	605	765	4	
	JWH0303	L-AG20CD 2,0 X 500 mm	20	EN 1044 : AG 309	605	765	4	
	JWH1363	L-AG34CD 1,5 X 500 mm - Flux Coated	34	EN 1044 : AG 305	610	700	7	
	JWH0693	L-AG34CD 1,5 X 500 mm	34	EN 1044 : AG 305	610	700	7	
	JWH1894	L-AG34CD 2,0 X 500 mm - Flux Coated	34	EN 1044 : AG 305	610	700	7	
	JWH1173	L-AG34CD 2,0 X 500 mm	34	EN 1044 : AG 305	610	700	7	
	JWH0153	L-AG40CD 1,5 X 500 mm - Flux Coated	40	EN 1044 : AG 304	593	630	9	
	JWH0158	L-AG40CD 1,5 X 500 mm	40	EN 1044 : AG 304	593	630	9	
	JWH0601	L-AG40CD 2,0 X 500 mm - Flux Coated	40	EN 1044 : AG 304	593	630	9	
	JWH0425	L-AG40CD 2,0 X 500 mm	40	EN 1044 : AG 304	593	630	9	
HIGH SILVER ALLOYS (WITHOUT CADMIUM)								
Steel, Nickel, Copper and Stainless Steel Alloys	JWH0433	L-AG34SN 2,0 X 500 mm - Flux Coated	34	EN 1044 : AG 106	630	730	4	Stay-Silv® White and Stay-Silv® Black to Stainless Steel if required
	JWH0291	L-AG34SN 2,0 X 500 mm	34	EN 1044 : AG 106	630	730	4	
	JWH0444	L-AG40SN 1,5 X 500 mm - Flux Coated	40	EN 1044 : AG 105	650	710	6	
	JWH0445	L-AG40SN 2,0 X 500 mm	40	EN 1044 : AG 105	650	710	6	
	JWH1046	L-AG55SN 1,5 X 500 mm - Flux Coated	55	EN 1044 : AG 103	620	660	8	
	JWH0955	L-AG55SN 1,5 X 500 mm	55	EN 1044 : AG 103	620	660	8	
	JWH0908	L-AG55SN 2,0 X 500 mm	55	EN 1044 : AG 103	620	660	8	
	Universal	JWH0706	STAY-SILV POWDER FLUX, 250 GR JAR	250 gr.	EN 1045 FH-10	EN 1045 FH-10		
JWH0177		STAY-SILV PASTE FLUX, 1LB JAR	450 gr.	EN 1045 FH-10	EN 1045 FH-10			
JWH0174		STAY-SILV BLACK FLUX, 1 LB-JARS	450 gr.	EN 1045 FH-21	EN 1045 FH-21			
JWH0193		600 Powder	450 gr.	AWS A5.31 FB3-J				

L-Ag20Cd: Wide melting range. Suitable for large gaps. Recommended to join brass, bronze and copper-nickel alloys. Yellow colour.

L-Ag34Cd: Medium melting range. Suitable for not too tight joints. Recommended for steel and copper alloys. Light yellow. Clearance 0,05 - 0,13mm

L-Ag40Cd: Very narrow melting range. Suitable for tight joints (0,05-0,13mm). Recommended for all type of alloys, except stainless steel, aluminum and titanium alloys. White yellow. Clearance 0,05 - 0,20mm

L-Ag34Sn: This Cadmium free / Tin-bearing alloy combines good fluidity with low temperatures to produce clean joints. Medium elongation and mechanical properties. Broadly used in the Food and HVAC industries. Light yellow color. Clearance 0,05 - 0,13mm

L-Ag40Sn: Ductile, free-flowing alloy that offers good mechanical properties; penetration into tight connections at a medium temperature range. Good anti-corrosion properties to join Stainless Steel. Ideal to Join Tungsten Carbides. Silver to light yellow color as in polished brass. Clearance 0,1 - 0,25mm

L-Ag55Sn: Its particular composition maximizes the benefits of low fusion range and good wet. Broadly used in the food industry and ideal to avoid stress corrosion.

STAY-SILV® (WHITE FLUX) An all purpose, low temperature flux for use in silver brazing. Use with most ferrous and non ferrous metals. Not recommended on aluminum, magnesium, and titanium. The active temperature range is 566°C - 8710°C

STAY-SILV® (BLACK FLUX) An all purpose, high temperature flux for use in silver brazing. Formulated for applications where the work is subjected to rapid, localized heating. Particularly useful in applications where large amounts of refractory oxides may form, such as with stainless steel, carbide, heavy parts, prolonged heating cycles. The active temperature range is 566°C - 982°C

HARRIS FILLER METAL SELECTION CHART

BRONZE - BRASS ALLOYS & PHOS-COPPER ALLOYS

Additional alloys and sizes not listed may be available upon request.

METAL TO BE JOINED	PART N°	DESCRIPTION	Ag%	Kg	SPECIFICATIONS	SOLIDUS C°	LIQUIDUS C°	FLUIDITY RATING	FLUXES
BRONZE - BRASS									
Steel with Steel	JWH0217	Low Fuming Bronze 1/8" X 36" - Flux Coated	0	1	Similar to CU304 BS: 1845 CZ6, 1453 C2*	870	900	2	600 Powder Flux
	JWH0212	Low Fuming Bronze 1/16" X 36"/ 1,60 X 914 mm	0	1	Similar to CU304 BS: 1845 CZ6, 1453 C2*	870	900	2	
	JWH0213	Low Fuming Bronze 3/32 X 36" / 2,40 X 914 mm	0	1	Similar to CU304 BS: 1845 CZ6, 1453 C2*	870	900	2	
PHOS-COPPER ALLOY									
Copper with Copper and Copper with Brass	JWH0694	L-CuP7 1,5 X 500 mm	0	1	EN 1044 : CP105 BS 1845: CP3	710	820	5	No flux to join Copper to Copper. Stay-Silv® White to Copper to Brass
	JWH0033	L-CuP7 2,0 X 500 mm	0	1	EN 1044 : CP105 BS 1845: CP3	710	820	5	
	JWH0031	L-CuP7 2,5 X 500 mm	0	1	EN 1044 : CP105 BS 1845: CP3	710	820	5	
	JWH0126	DYNAFLOW FLAT MARKED		1		645	796	3	
	JWH1635	BLOCKADE		1		637	674	4	
	JWH1636	BLOCKADE		1		637	674	4	
	JWH0094	L-Ag2P 1,5 X 500 mm	2	1	EN 1044 : CP105 BS 1845: CP2	645	825	4	
	JWH0096	L-Ag2P 2,0 X 500 mm	2	1	EN 1044 : CP105 BS 1845: CP2	645	825	4	
	JWH0092	L-Ag2P 2,0 X 2,0 X 500 mm	2	1	EN 1044 : CP105 BS 1845: CP2	645	825	4	
	JWH0088	L-Ag2P 2,5 X 500 mm	2	1	EN 1044 : CP105 BS 1845: CP2	645	825	4	
	JWH0382	L-Ag2P 3,0 X 500 mm	2	1	EN 1044 : CP105 BS 1845: CP2	645	825	4	
	JWH1105	L-Ag5P 1,5 X 1,5 X 500 mm	5	1	EN 1044 : CP104 BS 1845: CP4	645	815	3	
	JWH0120	L-Ag5P 2,0 X 500 mm	5	1	EN 1044 : CP104 BS 1845: CP4	645	815	3	
JWH0118	L-Ag5P 2,0 X 2,0 X 500 mm	5	1	EN 1044 : CP104 BS 1845: CP4	645	815	3		
JWH0792	L-Ag5P 2,4 X 500 mm	5	1	EN 1044 : CP104 BS 1845: CP4	645	815	3		
JWH0551	L-Ag5P 3,0 X 500 mm	5	1	EN 1044 : CP104 BS 1845: CP4	645	815	3		
JWH0130	L-Ag15P 2,0 X 500 mm		15	EN 1044 : CP102 BS 1845: CP1	645	800	3		

Harris American Low Fuming Bronze is a copper/zinc alloy developed for braze welding steel, cast iron, and copper. It can also be used for build up and overlay. Harris American Bronze flows easily with minimal fuming. Deposits can be machined and have excellent ductility.

L-CuP7: This low cost alloy is suitable for most copper-to-copper or brass joints where good fit-up exists, and the assemblies are not subject to excessive vibration nor movement. The phosphorus content serves as a "self-fluxing" agent in joining copper to copper.

DYNAFLOW® melts and flows at temperatures very close to Stay Silv 15, and provides comparable brazed mechanical properties. This makes DynafLOW an excellent cost effective alternative to the 15% silver alloys. This premium, medium range silver alloy has been meticulously formulated to even tighter specifications than our standard copper-to-copper alloys.

BLOCKADE® is a proprietary phosphorus-tin-silicon alloy engineered to provide a low cost alternative to silver bearing filler metals. It is self fluxing on copper and its lower melting temperature makes it an excellent choice for brass. Blockade flows rapidly but can be used to "cap" brazed joints.

L-Ag2P: This economical, low silver alloy, is designed to broaden the melting range of Harris 0, and has proven useful in some specific applications where mechanical properties are less critical.

L-Ag5P This medium-range alloy is well suited where close fit-up cannot be maintained. This filler metal is somewhat more ductile than Harris 0 or the L-Ag2P.

L-Ag15P: This filler metal is excellent for situations in which close fit-up does not exist, and where thermal expansion and service vibration are involved.

*Nearest specification

CERTIFICATE **TÜV NORD**

Management system as per
EN ISO 9001 : 2008

In accordance with TÜV NORD CERT procedures, it is hereby certified that

Harris Calorific International Sp. z o.o.
ul. Strefowa 8
PL / 58-200 Dzierżoniów

applies a management system in line with the above standard for the following scope:

Production and sale of pressure and flow regulators for industrial gasses as well as torches and accessories for gas cutting, welding and brazing

Certificate Registration No. **44 100 093102**
Audit Report No.: **PL2862/2009**

Valid until: **2012-12-21**

Certification Body
at TÜV NORD CERT GmbH

Katowice, 2009-12-22

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH

Langemarckstrasse 20

45141 Essen

www.tuev-nord-cert.com



TGA-ZM-07-06-00

Useful data – Conversion table

VOLUME

	cu in	cu ft	cu yd	cu cm	cu meter	liter	US gal
1 cu in	1	-	16,387			0,02	
1 cu ft	1.728,00	1	0,037	28.317	0,028	28,32	7,481
1 cu yd	46.656	27	1	-	0,764	764,5	202
1 cu cm	0,06	-	-	1	-	0,001	-
1 cu meter	61.024	35,31	1,308	1.000.000	1	1.000	264,2
1 liter	61.024	0,035	1		0,001	1	0,264
1 gallon (US)	231	0,133	0,004	3.785,40	0,003	3,785	1

PRESSURE

	psi	bar	atm	mm Hg	inch Hg	inch water	kPa
1 psi	1	0,068	0,068	51,713	2,035	27,68	6,895
1 bar	14,504	1	0,986	750,06	29,53	401:48:00	100
1 atm	14,696	1,013	1	760	29,921	406,8	101,325
1 mm Hg (torr)	0,019	0,001	0,001	1	0,039	0,535	0,133
1 in Hg	0,491	0,033	0,033	25,4	1	13,596	3
1 in water	5,202	0,358	0,002	269,02	10,591	1	35,808
1 kPa	0,145	0,01	0,009	7,519	0	4,015	1

WEIGHT

	grain	oz	lb	ton	gram	kg	metric ton
1 grain	1	0,002	-	-	0,064	-	-
1 ounce	437,5	1	0,062	-	28,35	0,028	-
1 pound	7.000	16	1	0,000	453,6	0,453	-
1 ton		32.000	2.000	1		907,2	0,907
1 gram	15,43	0,04	-	-	1	0,001	-
1 kilogram		35,274	2,205	-	1.000	1	0,001
1 metric ton	-	35,274	2.205	1,102	-	1.000	1

FLOW

	scc/min	Lpm	SCFM	l/h	Nm³/h	SCFH	
1 scc/min	1	0,001	0,06			0,002	
1 Lpm	1.000	1	0,035	60	0,06	2,119	
1 SCFM	28.317	26	1	1.699	1,699	60	
1 l/h	16,667	0,016	1		0,001	0,035	
1 Nm³/h	16.667	16,667	0,589	1.000	1	35,314	
1 SCFH	471,95	0,472	0,016	28,317	0,028	1	

SCFM = Standard Cubic Feet per Minute

scc/min = Standard Cubic Centimeters per Minute

SCFH = Standard Cubic Feet per Hour

Lpm = Liter per Minutes

Nm³/h = Normal Cubic Meter per Hour

ENERGY

	BTU	cal	watts-hour			
1 BTU	1	251,98	0,293			
1 cal	3.968x10-3	1	-			
1 watts-hour	3,414	-	1			

GAS CONVERSION FACTORS

	FACTOR	INVERSE
ACETYLENE (C ₂ H ₂)	1,050	0,952
ARGON (Ar)	0,851	1,175
ARGON/CO ₂ (75% Ar – 25% CO ₂)	0,833	1,200
NITROGEN (N ₂)	1,020	0,980
CARBON DIOXIDE (CO ₂)	0,808	1,238
SULFUR DIOXIDE (SO ₂)	0,660	1,515
BUTANE (C ₄ H ₁₀)	0,700	1,429
HELIUM (He)	2,695	0,371
ETHANE (C ₂ H ₆)	0,980	1,020
ETHYLENE (C ₂ H ₄)	1,010	0,990
FORMIER GAS (90% N ₂ – 10% H ₂)	1,300	0,769
HYDROGEN (H ₂)	3,810	0,262
METHANE (CH ₄)	1,350	0,741
METHYLACETYLENE PROPADIENE (MPS – C ₃ H ₄)	1,238	0,808
CARBON OXIDE (CO)	1,020	0,980
NEON (Ne)	1,200	0,833
OXYGEN (O ₂)	0,950	1,053
PROPANE (C ₃ H ₈)	0,800	1,250
PROPYLENE (C ₃ H ₆)	1,237	0,808
NITROGEN PROTOXIDE (N ₂ O)	0,810	1,235

AIR ► to

WARRANTY

The Company warrants each new product or part thereof to be free from defects in workmanship and material.

If any part thereof shall prove to be defective in workmanship or material within one year from the date of purchase by the user, as a result of normal use and service for purposes for which it was intended, as determined by the Company, the Company will replace the part or parts so determined by it to be defective with new parts, at Company's cost and expense.

This warranty is exclusive, and there are no other warranties or representations, expressed or implied.

NOTE:

We are constantly improving our products.

Harris Calorific therefore reserves the right to make changes in specifications without notice.

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