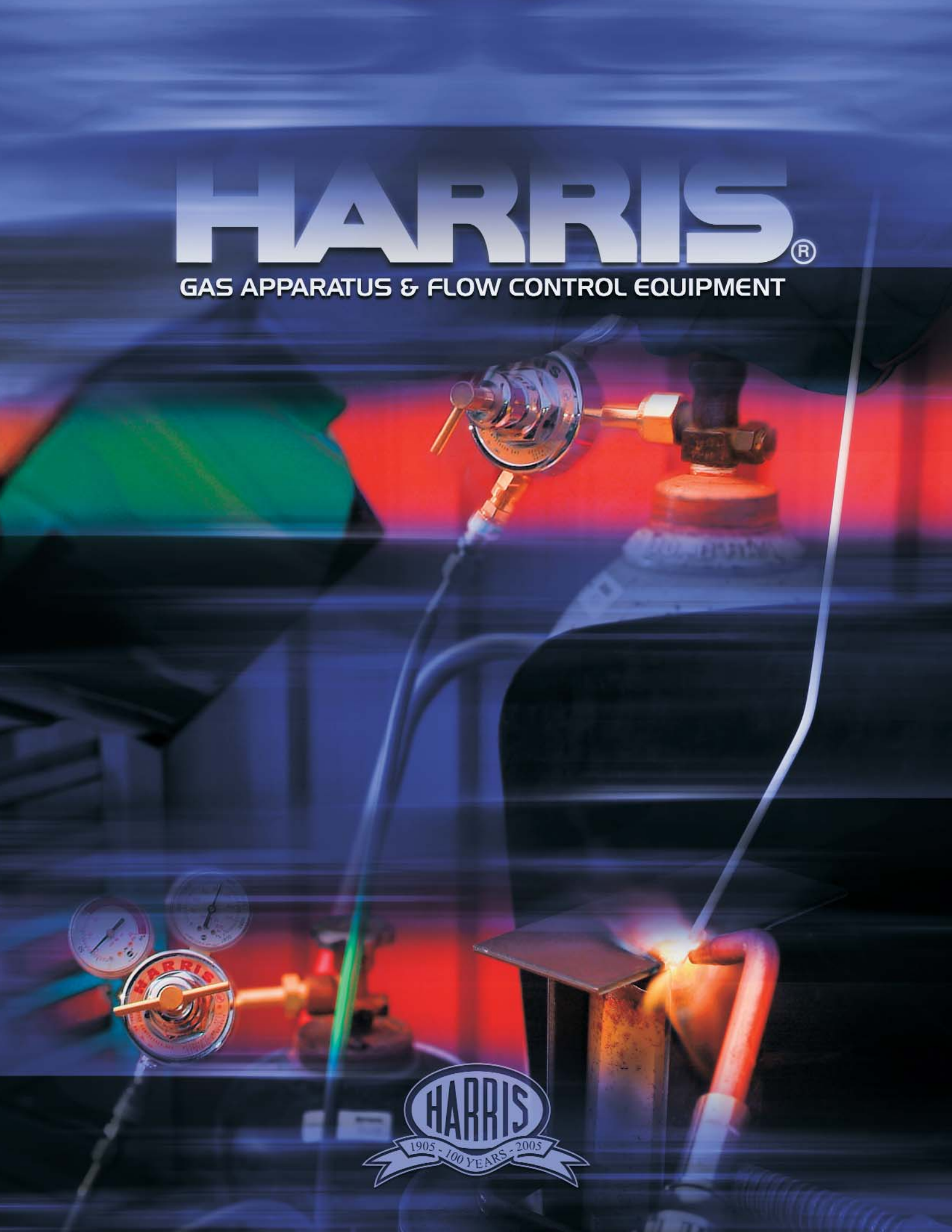


HARRIS®

GAS APPARATUS & FLOW CONTROL EQUIPMENT



Outfits: 4-7



Classic	4
Port-A-Torch	5
Cutter-Pac	5
Shielding Gas Kit	6
V-Series	6,7

Cutting Attachments: 8-9



V-Series	8,9
73-3	8
72-3	8
39-3F	8
49-3F	8
71-3	8

Handles: 9-16



V-315C/V-100C	9,10
Model 43-2	10,11
Model 85	10,12
Model 18-5	10,13
Model 50	10,14
Model 16 / 19-6	10,15
Model 15	10,16

Welding, Brazing & Heating Tips



Acetylene Welding, Brazing, Heating Tips	31
Alternate Fuel Tips, Brazing & Light Heating	33
K-43, 89-3, 81-12	34
2290 HMP, 2290 H, 2393 Tip Tube, RBP-43	35

Machine Cutting: 36-38



Straight Line Cutter	36
Model 80 Jumbo	36
Model 98-6 & Accessories	37
Machine Cutting Guide	38

FlashBack Arrestors: 39



Flash Back Arrestors, Quick Connectors, Check Valves	39
---	----

This year marks the 100th Anniversary of Harris Calorific. From a small shop on Cleveland Ohio's west side to our high-tech factory in Gainesville, Georgia, Harris History is as impressive as the products we produce.

HARRIS CALORIFIC CO., a pioneer in the production of gas welding and cutting apparatus was founded by John Harris, who discovered the oxy-acetylene method of cutting in 1899 while conducting research on the manufacture of synthetic rubies. His discovery led to the manufacture of the nation's first flame-cutting torch.

After exhibiting his cutting torch at the 1904 St. Louis World's Fair, he established the company in 1905. Harris continued to refine its gas torches and began to produce related accessories, such as gas pressure regulators. The U.S. Welding Co. of Minnesota purchased Harris in 1926. U.S.

Welding's founder, Lorne Campbell, Jr., served as President until the 1950's when Clarence Taylor assumed the position.

After World War II, the company found new markets for its products in research laboratories, aircraft and missile manufacturers. Under Clarence Taylor, Harris expanded national distribution, developed new equipment, stepped up advertising, and established subsidiaries and distributorships abroad.

By 1963 the company began to diversify into the area of anesthesia equipment for medical purposes at its new plant on Cass Avenue in Cleveland, Ohio.

Harris Calorific was acquired by the Emerson Electric Co. of St. Louis, Missouri in 1973 and expanded its domestic and European facilities and markets. In 1983, the

1905
St
2005

Index

Mixers: 17-19



Positive Pressure Mixers

Using Acetylene	17
Using Alternate Fuels	18

Low Pressure Mixers Using

Using Alternate Fuels	19
-----------------------------	----

Torches: 20-22



Model 62-5E, F	20
Model 880E, F	20
Model 42-4E, F	21
Model 136-2	21
Model V-62-5E, F	21
Model 6000	22

Cutting Tips: 23-30



Acetylene Cutting Tips	23
Alternate Fuel Cutting Tips	24-26
Machine Cutting Tips	27-29
8090, 136, V-Series	29
V-Series	30

Regulators: 40-53



Single Stage	40-42, 44
Two Stage	47, 48
Flowgauge	49
Shielding Gas Kit	49
Flowmeters	50, 51
Inert Gas Guard	52, 53

Spec. Gas: 54-55



750 Servo Dome	54
Series 400, 700, 720, 720C, 740	55
Specialty Gas Accessories	55

Swithovers/Manifolds: 56-67



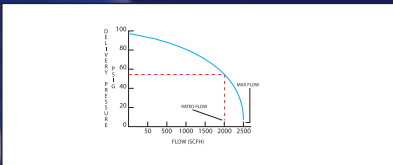
Series 200	56
Series 210	57
Series 220	58
Series 240	59
Series 230	60
Manifold Headers	61-62
Manifold Accessories	63-66
Cylinder Racks	67

Accessories: 68-69



Hose	68
Gauge	68
Inlet Nuts & Stems	69

Flowcharts/Flowdata: 70-85



Flowcharts	70-74
Regulator Flowdata	74-85

firm moved its Cleveland manufacturing operations to a new assembly plant in Gainesville, Georgia.

In 1990, The Lincoln Electric Company, the world leader in the design, development and manufacture of arc welding products, acquired Harris Calorific from Emerson Electric. Headquartered in Cleveland, Ohio, Lincoln has manufacturing operations, joint ventures and alliances in 18 countries and a worldwide network of distributors and sales offices covering more than 160 countries.

Harris Calorific has recorded many first in the industry including:

- First Cutting Torch
- Swaged Tips
- Automatic Welding Torch
- Multi-stage Regulators
- Gaugeless Regulators
- Safety Torch and Regulator Check Valves
- Safety Oxygen Surge Valves

Today, Harris Calorific is one of the largest independent manufacturers of gas apparatus equipment in the world. Harris Calorific products are distributed in over 90 countries throughout the world.



The first Oxy-Acetylene Cutting Torch built by John Harris.

Classic Outfits



Solid Forged Head



Brazed Triangular Tube Design



Ease-On Cutting Valve



Protected Torch Union

Pipeliner® Classic* - Cuts 6", Welds 1" with Larger Tips.

PART NUMBER	MODEL NUMBER	TORCH HANDLE	MIXER	CUTTING ATTACH.	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-125 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403155	43425-510 DLX	43-2	E-43	73-3	6290-1AC	23A90-5	425-125-540	425-15-510	Goggles, Striker 20' x 1/4" Hose
4403157	43425-300 DLX	43-2	E-43	73-3	6290-1AC	23A90-5	425-125-540	425-15-300	Goggles, Striker 20' x 1/4" Hose

Steelworker® Classic* - Cuts 5", Welds 1/2" with Larger Tips.

PART NUMBER	MODEL NUMBER	TORCH HANDLE	MIXER	CUTTING ATTACH.	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-100 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403069	8525-510 DLX	85	D-85	72-3	6290-1AC	23A90-5	25-100C-540	25-15C-510	Goggles, Striker 20' x 3/16" Hose
4403070	8525-300 DLX	85	D-85	72-3	6290-1AC	23A90-5	25-100C-540	25-15C-300	Goggles, Striker 20' x 3/16" Hose

Expert Classic* - Cuts 4", Welds 1/2" with Larger Tips.

PART NUMBER	MODEL NUMBER	TORCH HANDLE	MIXER	CUTTING ATTACH.	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-100 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403087	85201-510	85	D-85	72-3	6290-1AC	23A90-5	201-100C-540 (3000274)	201-15C-510 (3000272)	Goggles, Striker 20' x 3/16" Hose
4403088	85201-300	85	D-85	72-3	6290-1AC	23A90-5	201-100C-540 (3000274)	201-15C-300 (3000271)	Goggles, Striker 20' x 3/16" Hose

* Cuts 1", Welds 1/8" with tips supplied

Alternate Fuel Combo Classic - Cuts 5" with Proper Tips.

PART NUMBER	MODEL NUMBER	TORCH HANDLE	CUTTING ATTACH.	SINGLE STAGE OXYGEN REG.	SINGLE STAGE FUEL GAS REG.	ACCESSORIES
4403177	43425F-510P	43	49-3F	425-125-540	425-50C-510P	Goggles, Striker 20' x 3/16" T-Grade Hose
4403175	8525F-510P	85	39-3F	25-100C-540	25-15C-510P	Goggles, Striker 20' x 3/16" T-Grade Hose

A Global Family of Gas Cutting & Flow Control Equipment



Port-A-Torch®

Contains all the quality equipment needed for cutting, welding and brazing in a rugged molded plastic carrying case. The outfit is designed to carry one MC acetylene cylinder and one 20 cu.ft. oxygen cylinder. As supplied, the outfit is capable of cutting to 1" and welding to 1/16". Can cut to 4" and weld to 1/2" with larger tips and acetylene cylinder.

PART NUMBER	MODEL NUMBER	TORCH HANDLE	MIXER	CUTTING ATTACH.	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-125 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403077	16601-200-STD	16	H-16-2E	71-3	6290-1AC	23A90-3	601-100-540 (3000296)	601-15-200 (3000295)	Goggles, Striker 12'x3/16" Hose
4403078	16601-200-DLX	16	H-16-2E	71-3	6290-1AC	23A90-3	601-100-540 (3000296)	601-15-200 (3000295)	Goggles, Striker 12'x3/16" Hose 20 CU. FT. OXY CYL., 10 CU.FT. "MC" ACET. CYL. (cylinders shipped empty)

Cutter Pac®

Features industrial duty regulators that are backed by a three year warranty. Triangular stainless steel tube torch design insures superior strength and added safety.



PART NUMBER	MODEL NUMBER	CUTTING TORCH	TORCH LENGTH	TORCH HEAD ANGLE	SINGLE STAGE OXYGEN REG.	SINGLE STAGE FUEL GAS REG.
4401640	6225E-300	62-5E	18"	90°	25-100C-540	25-15C-300
4401638	6225E-510	62-5E	18"	90°	25-100C-540	25-15C-510
ALTERNATE FUEL						
4401639	6225F-510	62-5F	18"	90°	25-100C-540	25-50C-510

Shielding Gas Kit

A complete package for shielding gas supply to your MIG or TIG machine.

- ▶ Flowgauge regulator features 2" easy - to - read Argon/CO₂ Dual Scale Gauges
- ▶ Kit contains 10 feet of 3/16" approved hose with inert gas fittings.
- ▶ Flowgauge kits features the Model 301
- ▶ Flowmeter kits features the Model 355

Flowgauge
0-60 SCFH



Flowmeter
0-70 SCFH



PART NUMBER	MODEL NUMBER	GAS	FLOW CAPACITY SCFH	REGULATOR TYPE	ACCESSORIES
4400229	301AR-58010	Argon	0-60	Flowgauge	3/16" 10' Hose
4400231	301CD-32010	Carbon Dioxide	0-60	Flowgauge	3/16" 10' Hose
4400235	355-2AR-58010	Argon	0-70	Flowmeter	3/16" 10' Hose
4400234	355-2CD-32010	Carbon Dioxide	0-70	Flowmeter	3/16" 10' Hose

Harris V-Series® Advantage

OUTFITS

SOLID FORGED HEAD WITH MIXER

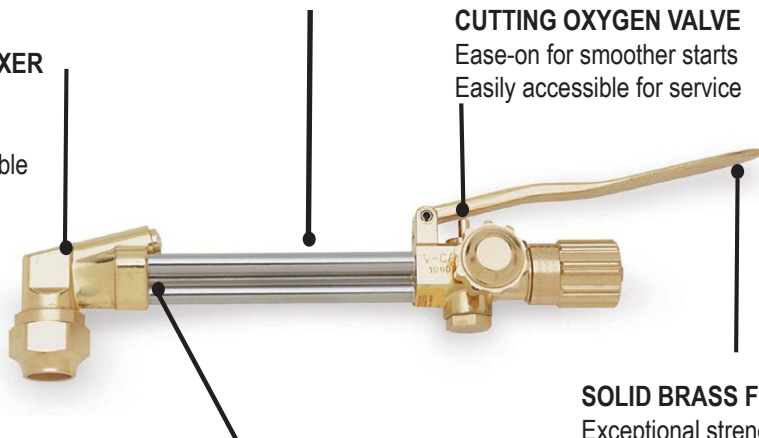
Resist flashback damage
Readily accessible mixer
Alternate fuel injector mixer available

TRIANGULAR TUBE CONSTRUCTION

Lightweight with strength and rigidity.

CUTTING OXYGEN VALVE

Ease-on for smoother starts
Easily accessible for service



BRAZED CONNECTION

Superior strength
Cannot loosen

SOLID BRASS FORGED LEVER

Exceptional strength and durability
Flips forward for safety and convenience



"V" Port-A-Torch®

The Port-A-Torch stores all the equipment you need for cutting, welding and brazing in a rugged, molded, plastic carrying case. Includes one MC acetylene cylinder and one 20 CF oxygen cylinder (both shipped empty). Cuts to 1" and welds to 1/16" with equipment supplied. Can cut 4" and weld to 1/2" with larger tips and acetylene cylinder (sold separately).

PART NO.	MODEL NO.	TORCH HANDLE	MIXER	CUTTING ATTACHMENTS	CUTTING TIPS	WELDING TIPS	SINGLE STAGE OXYGEN REG. 0-80 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403116	V-100601-200 DLX	V-100C	V-W-1	V-1350	V3-101-1	23A90-3	601-80-540 (3000296)	601-15-200 (3000295)	Goggles, Striker 12'x3/16" Hose 20 CU. FT. OXY CYL., 10 CU. FT. "MC" ACET. CYL. (cylinders shipped empty)
4403125	V-100601-200 STD	V-100C	V-W-1	V-1350	V3-101-1	23A90-3	601-80-540 (3000296)	601-15-200 (3000295)	Goggles, Striker 12'x3/16" Hose

A Global Family of Gas Cutting & Flow Control Equipment

V-Series Outfits

The Heavy Duty construction of the Harris V-Series® will deliver years of superior performance.

- ▶ Torch handle includes replaceable Flashguard® check valves
- ▶ Cutting attachments feature a solid forged head and triangular stainless steel tube design for added strength
- ▶ Protected torch union
- ▶ Head mix system - safe and efficient
- ▶ Uses Victor® style cutting tips
- ▶ Available in both acetylene and alternate fuel versions



OUTFITS

V-Series® Pipeliner* - Cuts 6", Welds 1" with Larger Tips.

PART NO.	MODEL NO.	TORCH HANDLE	MIXER	CUTTING ATTACHMENTS	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-125 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403048	V-3152500-510 DXL	V-315C	V-W	V-2460	V1-101-1	23A90-5	2500-125-540	2500-15-510	Goggles, Striker 20'X1/4" Hose
4403051	V-3152500-300 DXL	V-315C	V-W	V-2460	V1-101-1	23A90-5	2500-125-540	2500-15-300	Goggles, Striker 20'X1/4" Hose
4403097	V-3152500-510 DLX PLUS	V-315C	V-W	V-2460	V1-101-1	23A90-3,5,8	2500-125-540	2500-15-510	Goggles, Striker & J-63-2 Heating Tip

V-Series® Steelworker* - Cuts 4", Welds 1/2" with Larger Tips.

PART NO.	MODEL NO.	TORCH HANDLE	MIXER	CUTTING ATTACHMENTS	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-100 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403046	V-10025-510 DLX	V-100C	V-W-1	V-1350	V3-101-1	23A90-5	25-100C-540	25-15C-510	Goggles, Striker 20'X1/4" Hose
4403050	V-10025-300 DLX	V-100C	V-W-1	V-1350	V3-101-1	23A90-5	25-100C-540	25-15C-300	Goggles, Striker 20'X1/4" Hose
4403124	V-10025-510 DLX PLUS	V-100C	V-W-1	V-1350	V3-101-1	23A90-3,5,8	25-100C-540	25-15C-510	Goggles, Striker, Hose & J-63-2 Heating Tip

V-Series® Expert* - Cuts 4", Welds 1/2" with Larger Tips.

PART NO.	MODEL NO.	TORCH HANDLE	MIXER	CUTTING ATTACHMENTS	CUTTING TIP	WELDING TIP	SINGLE STAGE OXYGEN REG. 0-125 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403131	V-100201-510 DLX	V-100C	V-W-1	V-1350	V3-101-1	23A90-5	201-100C-540 (3000274)	201-15C-510 (3000272)	Goggles, Striker 20'X1/4" Hose
4403132	V-100201-300 DLX	V-100C	V-W-1	V-1350	V3-101-1	23A90-5	201-100C-540 (3000274)	201-15C-510 (3000271)	Goggles, Striker 20'X1/4" Hose

V-Series® Alternate Fuel Combos - Cuts 6" with Proper Tips.

PART NO.	MODEL NO.	TORCH HANDLE	MIXER	CUTTING ATTACHMENTS	SINGLE STAGE OXYGEN REG. 0-125 PSIG	SINGLE STAGE FUEL GAS REG. 0-15 PSIG	ACCESSORIES
4403178	V-3152500-510P DLX	V-315C	Not Included	V-2460-F	2500-125-540	2500-15-510P	Goggles, Striker,

20' x 1/4" T-Grade Hose

* Cuts 1" with #1 tip; Welds 1/8" with #5 tip supplied.

Classic Cutting Attachments

- ▶ Solid forged head resists abuse and distortion
- ▶ Triangular tube design is compact and lightweight with exceptional strength and rigidity
- ▶ Brazed connections prevents 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



Classic or Positive Pressure "E" Cutting Attachments

PART NUMBER	MODEL NUMBER	TORCH HEAD ANGLE	COMPATIBLE HANDLES
1300340	73-3	90°	43-2, 18-5, 63-2*
1300350	73-3A	70°	43-2, 18-5, 63-2*
1300380	72-3	90°	85
1300390	72-3A	70°	85

Classic or Low Pressure Injector "F" Cutting Attachments Do not use "F" cutting attachments with acetylene

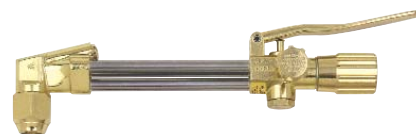
PART NUMBER	MODEL NUMBER	TORCH HEAD ANGLE	COMPATIBLE HANDLES
1300440	49-3F	90°	43-2, 18-5, 63-2*
1300430	49-3AF	70°	43-2, 18-5, 63-2*
1300405	39-3F	90°	85

* The Model 63 Torch Handle is no longer available.

Model R-69-3B (P/N 4300200)

Circle Cutting Attachment

For cutting circles up to 30" in diameter, as well as straight line cutting. A swivel nut permits circle cutting without tangling hoses. Wheels are adjustable for individual torch height. The R-69-3B makes better quality cuts with hand torches possible. Not for use with Pro Series equipment, Model 36 cutting attachment, Model 880 cutting torch or V-Series equipment.



73 - 3

Capacity: 6", Length: 9 1/2"; Weight: 1.5lbs.



72 - 3

Capacity: 5", Length: 9 1/2"; Weight: 1.5lbs.



71 - 3

Capacity: 4", Length: 8 1/4"; Weight: 1.4lbs.



49 - 3F

Capacity: 6", Length: 10 1/4"; Weight: 1.5lbs.



39 - 3F

Capacity: 6", Length: 10 1/4"; Weight: 1.5lbs.

Victor® Compatible Hand Cutting Attachments

MODEL NO.	PART NO.	HEAD ANGLE/STYLE	COMPATIBLE HANDLES	TIP SERIES
Positive Pressure “E” Equipment For Acetylene/MAPP®				
V-1350	1300506	90°/VICTOR® STYLE	Harris V-100C Victor® 100, Medalist® 260	V3-101, 3 GPN & 3-GPP
V-2460	1300512	90°/VICTOR® STYLE	Harris V-315C Victor® 315C Medalist® 350	1-101
V-2460-A	1300521	70°/VICTOR® STYLE		V1-101AC
V-73-3*	1300382	90°/VICTOR® STYLE		
Low Pressure “F” Equipment For Alternate Fuel				
V-2460-F	1300523	90°/VICTOR® STYLE	Harris V-315C Victor® 315C Medalist® 350	V-1-GPN, GPP
V-2460-AF	1300525	70°/VICTOR® STYLE		

* Model V-73-3 cutting attachment is no longer available.



V-1350

Capacity: 4", Length: 10 1/4"; Weight: 1.5lbs.



V-2460

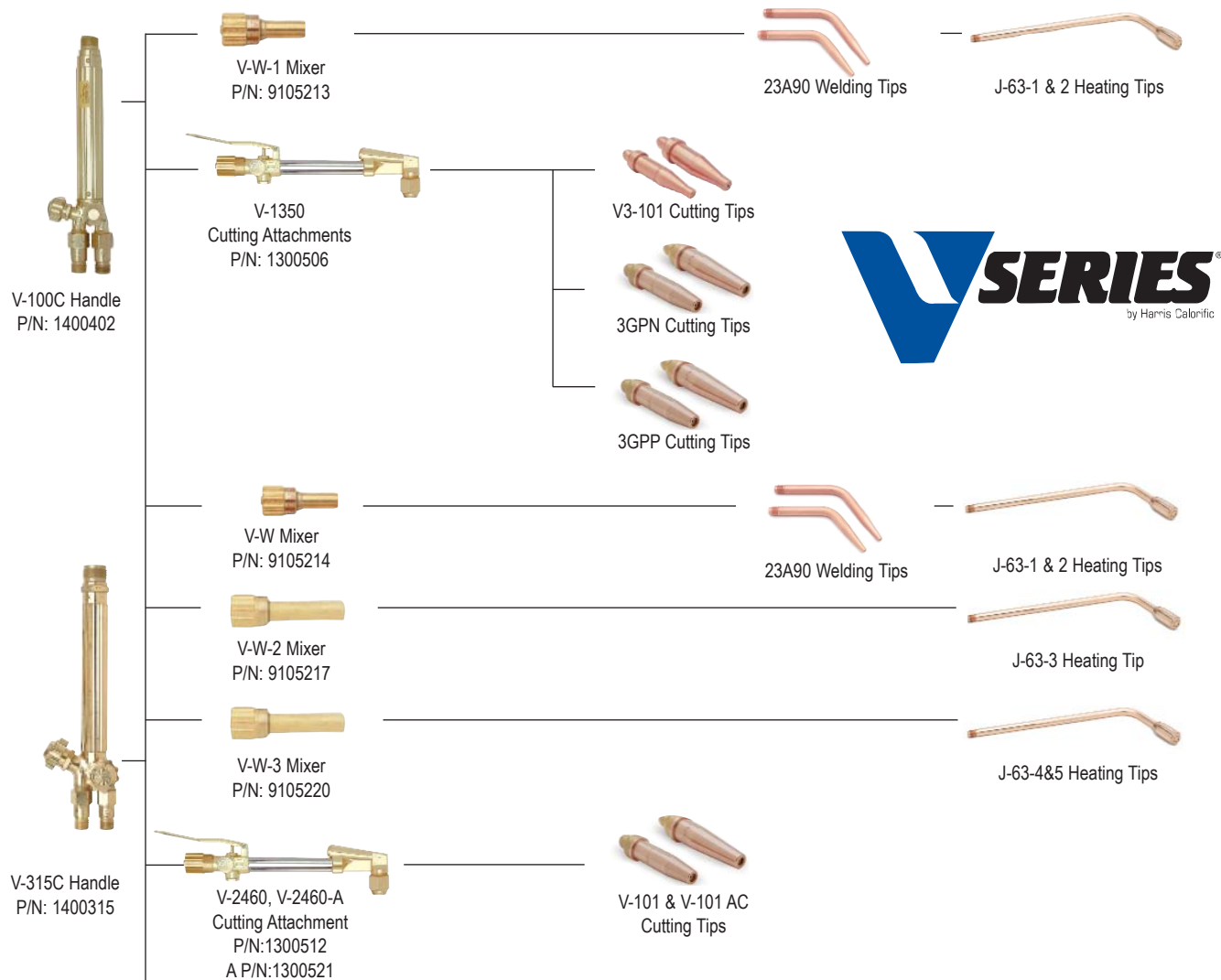
Capacity: 6", Length: 10 1/4"; Weight: 1.5lbs.

A Global Family of Gas Cutting & Flow Control Equipment

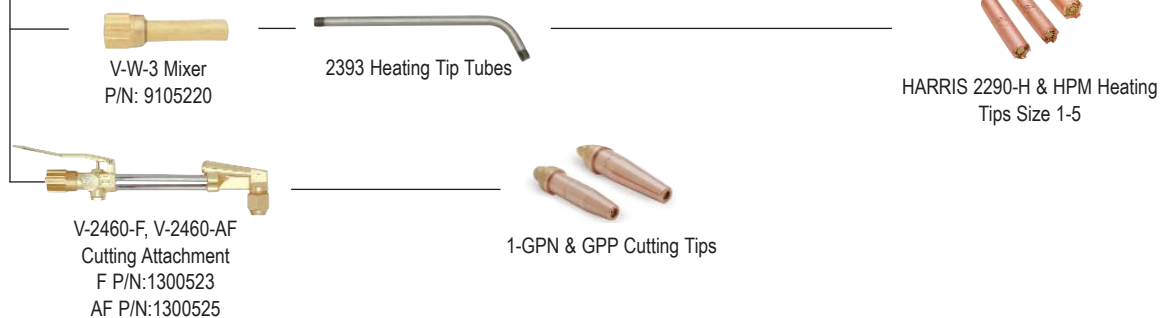
V-Series

Use the chart below to select the proper handle, cutting attachment and mixer combinations.

ALL FUEL GASES



ALTERNATE FUEL EQUIPMENT



Classic Torch Handles

Heavy Duty



Model 18 - 5
Length: 10 1/2"; Weight: 1.6 lbs.
Cuts 6", welds to 1/2" (page 13)



Model 43 - 2
Length: 9 1/2"; Weight: 1.4 lbs.
Cuts 6", welds to 1" (page 11)



Model V-315C
Length: 9 1/2"; Weight: 1.4 lbs.
Cuts 6", welds to 1" (page 9)



Medium Duty



Model 85
Length: 8 1/2"; Weight: 1 lbs.
Cuts 5", welds to 1/2" (page 12)



Model 50
Length: 8"; Weight: 0.8 lbs.
Cuts 3", welds to 1/2" (page 14)



Model 16
Length: 7 3/4"; Weight: 0.9 lbs.
Cuts 4", welds to 1/2" (page 15)



Model 19 - 6
Length: 7 1/2"; Weight: 0.7 lbs.
Cuts 2", welds to 5/16" (page 15)



Model V-100C
Length: 7 3/4"; Weight: 0.9 lbs.
Cuts 4", welds to 1/2" (page 9)



Light Duty

Model 15
Length: 5 3/4"; Weight: 0.5 lbs.
Cuts 2", welds to 5/16" (page 16)



A Global Family of Gas Cutting & Flow Control Equipment

Model 43-2 Classic Torch Handle

The Model 43-2 is a high capacity combination handle. With proper accessories, it can be used for either acetylene or other fuel gases.

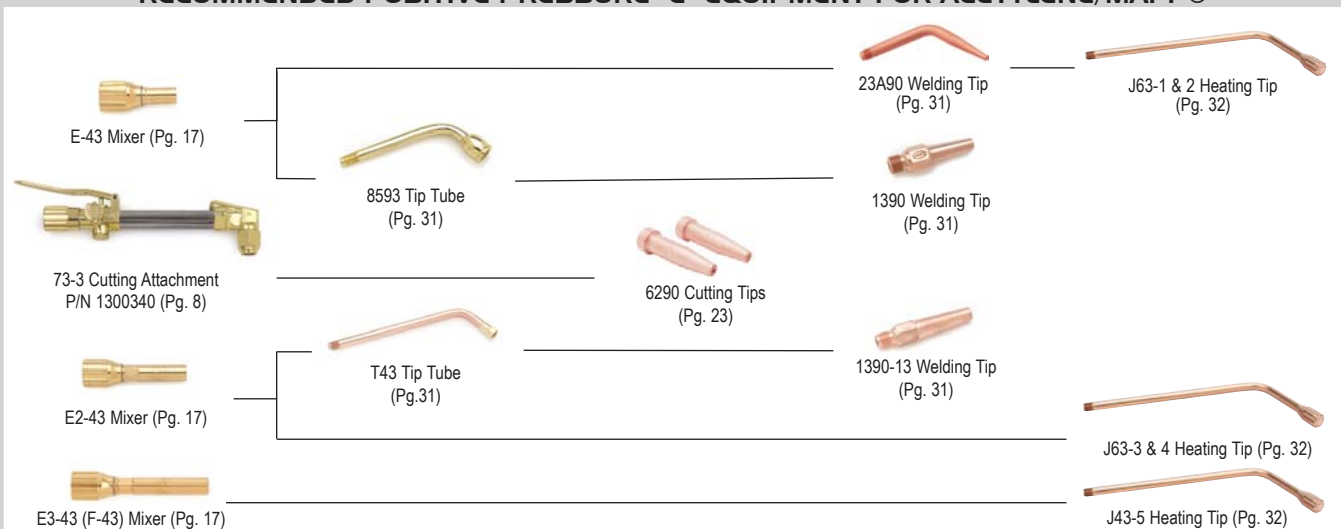
- ▶ Stainless steel head
- ▶ Equipped with FlashGuard® check valves
- ▶ Capacity: cuts 6", welds to 1"
- ▶ Length: 9 1/2"
- ▶ Weight: 1.4lbs



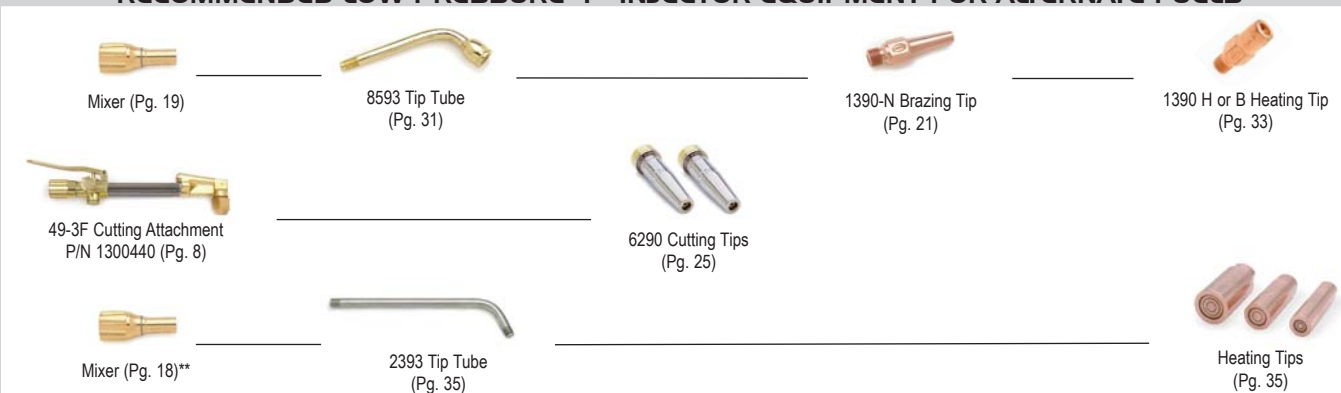
PART NO.	MODEL NO.	DESCRIPTION
1401150	43-2	HANDLE W/ STAINLESS STEEL HEAD

TORCH HANDLES

RECOMMENDED POSITIVE PRESSURE "E" EQUIPMENT FOR ACETYLENE/MAPP®*



RECOMMENDED LOW PRESSURE "F" INJECTOR EQUIPMENT FOR ALTERNATE FUELS



**Heavy duty heating applications require an E3-43/(F-43) mixer.

MAPP® is a registered trademark of the BOC Group, Inc.

Model 85 Classic Torch Handle

The Model 85 is designed for welding, heating and cutting with oxy-acetylene but can be adapted to alternate fuels with the proper accessories.

- ▶ Silver brazed twin tube construction for safety and durability.
- ▶ Equipped with FlashGuard® check valves
- ▶ Capacity: cuts 5", welds to 1/2"
- ▶ Length: 8 1/2", Weight: 1lb



PART NO.	MODEL NO.	DESCRIPTION
1401340	85	HANDLE



RECOMMENDED POSITIVE PRESSURE "E" EQUIPMENT FOR ACETYLENE/MAPP®*

D-85 Mixer (Pg. 17)

8593 Tip Tube
(Pg. 31)

23A90 Welding Tip
(Pg. 31)

1390 Welding Tip
(Pg. 31)

1390-HA Welding Tip
(Pg. 31)

J63-1 & 2 Heating Tips
(Pg. 32)

72-3 Cutting Attachment
P/N 1300380 (Pg. 8)

6290 Cutting Tips
(Pg. 23)

RECOMMENDED LOW PRESSURE INJECTOR "F" EQUIPMENT FOR ALTERNATE FUELS

39-3F Cutting Attachment
P/N 1300405 (Pg. 8)

6290 Cutting Tips
(Pg. 25)

Model 18-5 Automatic Torch Handle

The Model 18-5 automatic torch handle features an exclusive gas control system to reduce operating costs and to 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 18-5 on/off feature can be used for cutting, welding and brazing with all fuel gases. The pilot light feature is only recommended for oxy-acetylene welding and brazing.

- ▶ Automatic on/off gas control
- ▶ Adjustable pilot light
- ▶ Equipped with Flash Guard® check valves
- ▶ Capacity: cuts 6", welds to 1/2"
- ▶ Length: 10 1/2", Weight: 1.6 lbs



PART NO.	MODEL NO.	DESCRIPTION
1401820	18-5	HANDLE



TORCH HANDLES

RECOMMENDED POSITIVE PRESSURE "E" EQUIPMENT* FOR ACETYLENE/MAPP®

E-43 Mixer (Pg. 17)

8593 Tip Tube (Pg. 31)

23A90 Welding Tip (Pg.31)

1390 Welding Tip (Pg. 31)

73-3 Cutting Attachment*
P/N 1300340 (Pg. 8)

6290 Cutting Tips (Pg. 23)

RECOMMENDED LOW PRESSURE INJECTOR "F" EQUIPMENT FOR ALTERNATE FUELS

B-43 Mixer (Pg. 19)

8593 Tip Tube (Pg. 31)

1390-N Brazing Tip (Pg. 33)

49-3F Cutting Attachment
P/N 1300440 (Pg. 8)

6290 Cutting Tips (Pg. 25)

Model 50 Automatic Torch Handle

The Harris 50-9 and 50-10 automatic torch handles feature a unique gas control system to reduce operating cost 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 light feature is not recommended when using cutting attachments or heating tips. Select the Model 50-9 for acetylene/MAPP® and the 50-10 for other fuels.

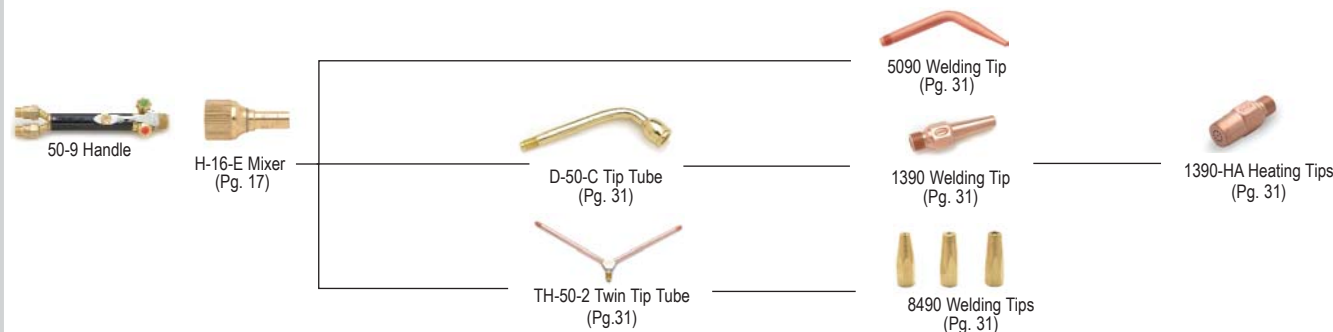
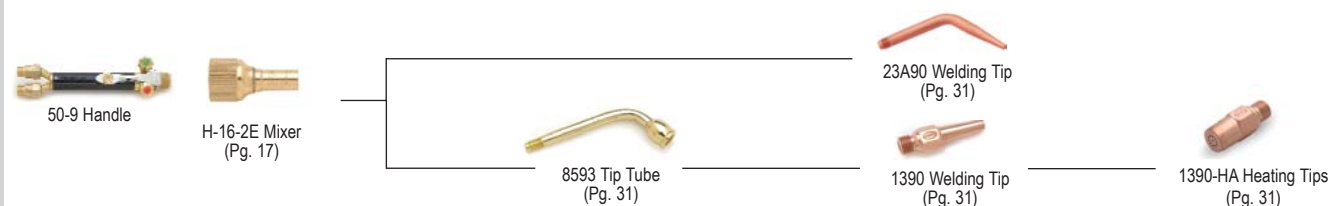
PART NO.	MODEL NO.	DESCRIPTION
ACETYLENE		
1401585	50-9	HANDLE
ALTERNATE FUELS		
1401590	50-10	HANDLE



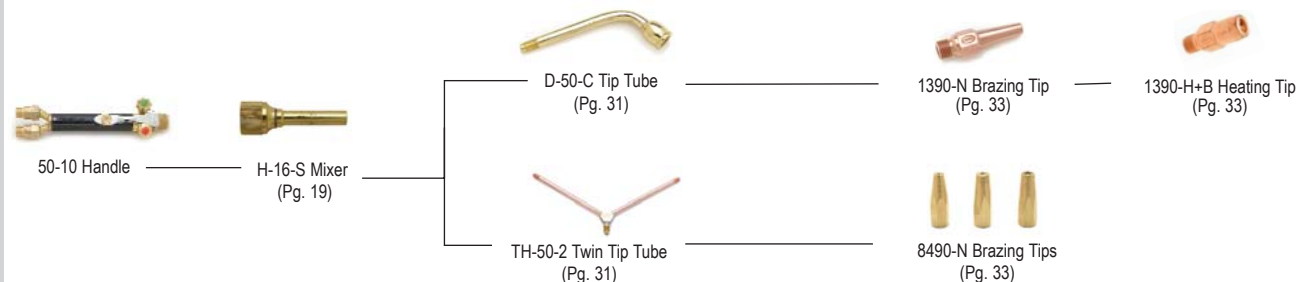
- ▶ Automatic on/off gas control
- ▶ Adjustable pilot light
- ▶ Equipped with Flash Guard® check valves
- ▶ Capacity: cuts 3", welds to 1/2"
- ▶ Length: 8", Weight: 0.8 lbs



RECOMMENDED POSITIVE PRESSURE "E" EQUIPMENT* FOR ACETYLENE/MAPP®



RECOMMENDED LOW PRESSURE INJECTOR "F" EQUIPMENT FOR ALTERNATE FUELS



A Global Family of Gas Cutting & Flow Control Equipment

Model 16 Torch Handle



The Harris 16 combination torch handle for cutting, welding, brazing and heating. It can be used with oxy-acetylene or other fuel gases. The Model 16 features silver brazed twin tube construction.

- ▶ Equipped with FlashGuard® check valves
- ▶ Capacity: cuts 4", welds to 1/2"
- ▶ Length: 7 3/4", Weight: 0.9 lbs

Model 19-6 Torch Handle



The Harris 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.

- ▶ Equipped with FlashGuard® check valves
- ▶ Capacity: cuts 2", welds to 5/16"
- ▶ Length: 7 1/2", Weight: 0.7lbs

PART NO.	MODEL NO.	DESCRIPTION
1401016	16	HANDLE



PART NO.	MODEL NO.	DESCRIPTION
1401156	19-6 W/Check Valves	HANDLE



RECOMMENDED POSITIVE PRESSURE "E" EQUIPMENT FOR ACETYLENE/MAPP®*

H-16-2E Mixer (Pg. 17)

8593 Tip Tube
(Pg. 31)

23A90 Welding Tip
(Pg. 31)

1390 Welding Tip
(Pg. 31)

1390-HA Heating Tip (Pg. 31)

H-16-E Mixer (Pg. 17)

D-50-C Tip Tube
(Pg. 31)

5090 Welding Tip
(Pg. 19)

1390 Welding Tip
(Pg. 31)

1390-HA Heating Tip (Pg. 31)

71-3 Cutting Attachment
P/N 1300400 (Pg. 8)

6290 Cutting Tips
(Pg. 23)

RECOMMENDED LOW PRESSURE INJECTOR "F" EQUIPMENT FOR ALTERNATE FUELS

H-16-S Mixer (Pg. 19)

D-50-C Tip Tube
(Pg. 31)

TH-50-2 Twin Tip Tube
(Pg. 31)

1390-N Brazing Tip
(Pg. 33)

8490-N Brazing Tips
(Pg. 33)

1390B & H Heating Tips
(Pg. 33)

8490-6-65 Heating Tip
(Pg. 33)

Model 15 Classic Torch Handle

The Model 15 is a lightweight, aircraft style (Class A 3/8"- 24 hose connection) featuring a forward valve designed to permit changing flame settings with one hand. For welding, heating and brazing with all fuel gases.

- ▶ Class A 3/8"- 24 hose connection
- ▶ Capacity: cuts 2", welds to 5/16"
- ▶ Length: 5 3/4", Weight: 0.5 lbs



PART NO.	MODEL NO.	DESCRIPTION
1400010	15-3	HANDLE

RECOMMENDED POSITIVE PRESSURE "E" EQUIPMENT FOR ACETYLENE/MAPP®*



RECOMMENDED LOW PRESSURE INJECTOR "F" EQUIPMENT FOR ALTERNATE FUELS



Positive Pressure "E" Mixers Using Acetylene

Positive Pressure "E" Type Mixers

PART NUMBER	MIXER	FITS HANDLE	TIP TUBES	ACETYLENE WELDING TIPS	ACETYLENE HEATING TIPS
9100312	E-43	43-2, 63-2**, 18-5*	- 8593	23A90-0 thru 10 1390-0 thru 10	J-63-1 and 2 1390-HA
9100314	E2-43	43-2, 63-2**, 18-5*	- T-43	23A90-13 and 15 1390-13	J-63-3 and 4 -
9100316	E3-43/(F-43)	43-2	-	-	J-43-5
9100896	W-2030	2000,3000*	- 8593	23A90-0 thru 10 1390-0 thru 10	J-63-1 and 2 1390-HA
9100894	H-2030	3000*	- T-43	23A90-13 and 15 1390-13	J-63-3 and 4; J-43-5 -
		2000*	- T-43	23A90-13 thru 10 1390-13	J-63-3 and 4 -
9100614	D-85	85	- 8593	23A90-0 thru 10 1390-0 thru 10	J-63-1 and 2 1390-HA
9100096	H-16-E	16, 50-9, 19	- TH-50-2 D-50-C	5090-0 thru 10 1390-0 thru 8 1390-0 thru 10	J-16-1 and 2 8490-6-65 1390-HA
9100787	H-16-2E	16, 50-9, 19	- 8593	23A90-0 thru 10 1390-0 thru 10	J-63-1 and 2 1390-HA
9100070	B-15-3	15-3	- D-50-C TH-50-2	5090-0 thru 8 1390-0 thru 8 8490-2 thru 8	- - 8490-6-65

* Model 18-5 Torch Handle not recommended for heating.

** Model 2000, 3000 AND 63-2 Torch Handles are no longer available.



Positive Pressure "E" Mixers Using Alternate Fuels

Positive Pressure "E" Type Mixers

PART NUMBER	MIXER	HANDLE	TUBES	BRAZING	PROPANE/PROPYLENE HEATING
9100312	E-43	43-2, 63-2, 18-5	8593	1390-4N thru 10N	1390-B and H
9100314	E2-43	43-2, 63-2, 18-5	T-43	1390-13N and 15N	1390-3H
9100316	E3-43/(F-43)	43-2	2393-1F thru 5F	-	2290-H and HPM (1 thru 5)
		63-2	2393-1F thru 5F	-	2290-H and HPM (1 thru 4)
		43-2, 63-2	T-43	1390-13N thru 80N	1390-3H
9100896	W-2030	2000,3000*	8593	1390-4N thru 10N	1390-B and H
9100894	H-2030	3000*	2393-1F thru 5F	-	2290-H and HPM (1 thru 5)
			T-43	1390-13N thru 80N	1390-3H
		2000	2393-1F thru 5F	-	2290-H and HPM (1 thru 5)
			T-43	1390-13N thru 15N	1390-3H
9100614	D-85	85	8593	1390-4N thru 10N	1390-B and H
9100096	H-16-E	16, 50-9, 19	D-50-C	1390-4N thru 10N	1390-B and H
			TH-50-2	8490-2N thru 8N	8490-6-65
9100787	H-16-2E	16, 50-9, 19	8593	1390-4N thru 10N	1390-B and H
9100070	B-15-3	15-3	D-50-C	1390-4N thru 8N	-
			TH-50-2	8490-4N thru 8N	8490-6-65

* Model 2000, 3000, 63-2 Torch Handle is no longer available.



H-16-E



E-43



E3-43/(F-43)



H-16-2E



E2-43



H-2030



B-15-3



W-2030



D-85

Low Pressure "F" Injector Mixers Using Alternate Fuels

"F" or Low Pressure Injector Type Mixers

PART NUMBER	MIXER	FITS HANDLE	TIP TUBES	NATURAL GAS/ PROPANE/ PROPYLENE BRAZING TIPS	HEATING TIPS
9100306	B-43-N	43-2, 63-2	2393-1-5 T-43	1390-20N, 30N, 80N	2290 1 thru 3H & HPM 1390-3H
9100304	B-43-15	43-2, 63-2	T-43	1390-13N, 15N	-
9100302	B-43-10	43-2, 63-2, 18-5	8593	1390-10N	1390-B, H
9100298	B-43-8	43-2, 63-2, 18-5	8593	1390-8N	-
9100296	B-43-7	43-2, 63-2, 18-5	8593	1390-7N	-
9100294	B-43-6	43-2, 63-2, 18-5	8593	1390-6N	-
9100292	B-43-5	43-2, 63-2, 18-5	8593	1390-5N	-
9100290	B-43-4	43-2, 63-2, 18-5	8593	1390-4N	-
9100100	H-16-S	16, 50-10, 19	D-50-C TH-50-2	1390-4N, 10N 8490-4N, 8N	1390-H, B 8490-6-65
9100072	B-15-3S	15-3	8493-N	8490-4N, 8N	8490-6-65

NOTE: Not for use with acetylene. Tip tubes shown on page 31 & 35.
63-2 Handle is no longer available.



H-16-S

5/16" - 27



B-43-N

1/2" - 25



B-15-3S

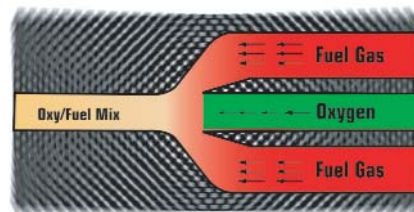
1/4" - 32

Typical "E" Mixer Design

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.

To thoroughly mix the oxygen and fuel gas, "E" mixer designs rely on positive 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.

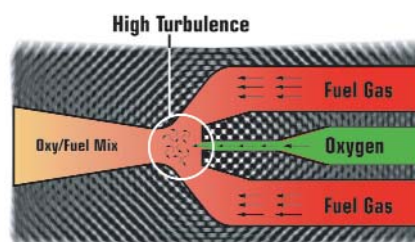
This design is primarily used with acetylene but can also be used with alternate fuels when positive pressure control of the fuel gas is available.



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

"F" mixers are used primarily with low pressure natural gas. However, they are also recommended for use with alternate fuels when maximum BTU output is needed and / or positive pressure control of the fuel gas is not available.



Model 62-5E, F Hand Cutting Torch



...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 (4 oz. - 2 PSIG) making it the safest, most efficient design in the industry.

- ▶ Cuts to 12"
- ▶ Solid forged head
- ▶ Triangular tube design
- ▶ Brazed connections
- ▶ Equipped with FlashGuard® check valves

Positive Pressure "E" Torches (For Acetylene and Alternate Fuels)

PART NO.	MODEL NO.	HEAD	LENGTH**	WEIGHT
1003350	62-5AE	70°	18"	3.0 lbs.
1003430	62-5E	90°	18"	3.0 lbs.
1003464	62-5AEL	70°	21"	3.1 lbs.
1003440	62-5EL	90°	21"	3.1 lbs.
1003351	62-5AEL	70°	36"	3.8 lbs.
1003441	62-5EL	90°	36"	3.8 lbs.



Low Pressure "F" Injector Torches (For Maximum Performance with Alternate Fuels*)

PART NO.	MODEL NO.	HEAD	LENGTH**	WEIGHT
1003360	62-5AF	70°	18"	3.0 lbs
1003450	62-5F	90°	18"	3.0 lbs
1003460	62-5BF	180°	18"	3.0 lbs
1003370	62-5AFL	70°	21"	3.1 lbs
1003470	62-5FL	90°	21"	3.1 lbs
1003390	62-5AFL	70°	27"	3.5 lbs
1003449	62-5FL	90°	27"	3.5 lbs
1003400	62-5AFL	70°	36"	3.8 lbs
1003480	62-5FL	90°	36"	3.8 lbs
1003426	62-5BFL	180°	36"	3.8 lbs
1003411	62-5AFL	70°	48"	4.4 lbs
1003481	62-5FL	90°	48"	4.4 lbs
1003421	62-5BFL	180°	48"	4.4 lbs

*Not for use with Acetylene

** NOTE: Other Lengths Available on Special Order

Model 880E, F Hand Cutting Torch



- ▶ Cuts to 8" with acetylene
- ▶ Cuts to 6" with alternate fuels
- ▶ Unique patented head mix system
- ▶ Stainless steel cutting oxygen lever with locking clip
- ▶ Protected internal tip nut threads
- ▶ Ease-on cutting oxygen valve
- ▶ Solid forged head
- ▶ In-line tube design
- ▶ Equipped with Flash Guard® check valves

Positive Pressure "E" Torches For Acetylene

PART NO.	MODEL NO.	HEAD	LENGTH	WEIGHT
1001500	880	90°	19"	2lbs., 6oz.



Low Pressure "F" Injector Torch (for Maximum Performance with Alternate Fuels*)

PART NO.	MODEL NO.	HEAD	LENGTH	WEIGHT
1001501	880-F	90°	19"	2lbs., 6oz.

*Not for use with Acetylene

Model 42-4E, F Hand Cutting Torch



- ▶ Cuts to 6"
- ▶ Lightweight
- ▶ Solid forged head
- ▶ Triangular tube design
- ▶ Brazed tube connections
- ▶ Equipped with Flash Guard® check valves



Low Pressure "F" Injector Torches (For Maximum Performance with Alternate Fuels*)

PART NO.	MODEL NO.	HEAD	LENGTH	WEIGHT
1001210	42-4F	90°	17"	2.4lbs
1001212	42-4AF	70°	17"	2.4lbs
1001214	42-4FL	90°	20"	2.5lbs
1001216	42-4AFL	70°	20"	2.5lbs

*Not for use with Acetylene

Positive Pressure "E" Torches (For Acetylene and Alternate Fuels)

PART NO.	MODEL NO.	HEAD	LENGTH	WEIGHT
1001204	42-4E	90°	17"	2.4lbs
1001206	42-4AE	70°	17"	2.4lbs
1001218	42-4EL-20	90°	20"	2.5lbs
1001208	42-4AEL-20	70°	20"	2.5lbs

Model V-62-5E, F Hand Cutting Torch



- ▶ Cuts to 12"
- ▶ Solid forged head
- ▶ Triangular tube design
- ▶ Brazed connections
- ▶ Equipped with FlashGuard® check valves



Victor® Compatible Hand Cutting Torches Positive Pressure "E" Torches (For Acetylene and Alternate Fuels)

MODEL NO.	PART NO.	HEAD ANGLE/STYLE	LENGTH	HARRIS TIPS
V-62-5EL	1003223	90°/VICTOR® STYLE	21"	V1-101, V1-101 AC (000 THRU 6)
V-62-5AEL	1003259	70°/VICTOR® STYLE	21"	V1-101, V1-101 AC (000 THRU 6)

Low Pressure Injector "F" Torches (For Maximum Performance with Alternate Fuels*)

V-62-5FL	1003261	90°/VICTOR® STYLE	21"	1-GPP, 1-GPN (000 THRU 6)
V-62-5AFL	1003266	70°/VICTOR® STYLE	21"	1-GPP, 1-GPN (000 THRU 6)
V-62-5AFL	1003287	70°/VICTOR® STYLE	36"	1-GPP, 1-GPN (000 THRU 6)
V-62-5FL	1003274	90°/VICTOR® STYLE	36"	1-GPP, 1-GPN (000 THRU 6)

Model 6000 Foundry Hand Cutting Torch

HEAVY CUTTING, SCARFING AND EMERGENCY CUT-OFF FOR CONTINUOUS CAST

- ▶ Tip Mix Design
- ▶ Well Balanced For Operator Comfort
- ▶ Extra High Flow Capacity
- ▶ Ridged Triangular Tube Arrangement
- ▶ Stainless Steel Head & Tubes
- ▶ Built to specified lengths up to 18'
- ▶ Available in Two or Three Hose Configurations
- ▶ Available with 70°, 90° and 180° heads
- ▶ Cuts 50"



Emergency Cut-off
Torch Stand



MODEL 6075R
Scarfing Torch with
Rod Feed

The Model 6000 Torch

Special Order Only

PART NO.	MODEL NO.	HEAD	LENGTH**
SCF6000	Heavy Cutting & Scarfing	1800	Specify
SCF6075	Heavy Cutting & Scarfing	750	Specify
SCF6090	Heavy Cutting & Scarfing	900	Specify
SCF6175	Emergency Cut-off Torch with Stand	750	Specify
SCF6180	Emergency Cut-off Torch with Stand	900	Specify
SCF6075R	Special Scarfing Torch with Rod Feed	750	Specify

Model 136-2 Foundry Hand Cutting Torch

- ▶ Cuts to 36"
- ▶ Stainless steel head and tubes
- ▶ Triangular tube design
- ▶ Tip mix torch for propane or natural gas
- ▶ Requires 3/8" hose
- ▶ Internal tip nut

Special Order Only

MODEL NO.	HEAD ANGLE	LENGTH
136-2A-21	70°	21"
136-2-21	90°	21"
136-2B-21	180°	21"
136-2AL-36	70°	36"
136-2L-36	90°	36"
136-2BL-36	180°	36"
136-2AL-48	70°	48"
136-2L-48	90°	48"
136-2BL-48	180°	48"

*The 136-2 Heavy Duty Torch is available in other lengths and head angles.



See Page 29 For Available Tip.

6000 & 136 Hose Recommendations

GAS TYPE	HOSE SIZE	CONNECTION
Oxygen	1/2" I.D.	"C" RH
Fuel Gas	3/8" I.D.	"B" LH
Oxygen Pre Heat for three hose torches.	3/8" I.D.	"B" RH

Acetylene Cutting Tips For use with Positive Pressure "E" Torches

Oxy-Acetylene One Piece 6290 General Preheat Tip Chart



6290 GENERAL PREHEAT PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	CUTTING ACETYLENE PSIG	ORIFICE DRILL SIZE
1500810	Light Gauge to 3/16	000	15-20	5-15	#68
1500820	3/16-3/8	00	20-25	5-15	#64
1500830	3/8-5/8	0	35-40	5-15	#60
1500840	5/8-1	1	35-40	5-15	#56
1500850	1-2	2	40-45	5-15	#52*
1500860	2-3	3	45-50	5-15	#48
1500870	3-6	4	50-75	10-15	#42

NOTE: To provide required gas flow, use 3/8" ID hose for size 4 and larger.

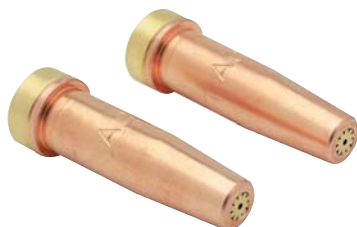
Oxy-Acetylene One Piece 6290-S Heavy Preheat Tip Chart



6290-S HEAVY PREHEAT PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	ACETYLENE PSIG	CUTTING ORIFICE DRILL SIZE
1501470	To 5/8-1	1S	35-40	5-15	#56
1501480	1-2	2S	40-45	5-15	#52*
1501490	2-3	3S	45-50	5-15	#48
1501500	3-6	4S	50-75	5-15	#42
1501510	6-8	5S	65-80	5-15	#35
1501520	8-12	6S	70-90	10-15	#30

NOTE: (2S-#51) To provide required gas flow, use 3/8" ID hose for size 4 and larger.

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



6290-AC PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	ACETYLENE PSIG	CUTTING ORIFICE DRILL SIZE
1502170	3/16-3/8	00AC	15-30	5-15	#64
1502171	3/8-5/8	0AC	20-35	5-15	#60
1502172	5/8-1	1AC	30-50	5-15	#56
1502173	1-2	2AC	40-65	5-15	#53
1502174	2-4	3AC	40-65	5-15	#52
1502175	4-7	4AC	50-80	5-15	#42
1502176	7-10	5AC	65-80	5-15	#35
1502177	10-12	6AC	70-95	5-15	#31

NOTE: To provide required gas flow, use 3/8" ID hose for size 4 and larger.

3690 Acetylene Tip Chart



PART NO.	TIP SIZE	METAL THICKNESS INCHES	OXYGEN PSIG	ACETYLENE PSIG	WHERE USED
1500650	0	1/4-1/2	20-25	5	36-2
1500660	1	1/2-1	25-45	5	
1500670	2	1-3	40-60	5	

6290 Acetylene Specialty Tips



PART NO.	TIP	APPLICATION	OXYGEN PSIG	ACETYLENE PSIG	WHERE USED
1500910	6290-1G	Gouging 1/8-1/4" Wide	35	5-15	Recommended Only for "E" Straight Torches and 2101 and 3101 Cutting Attachments
1500920	6290-2G	Gouging 3/16-3/8" Wide	50	5-15	
1500930	6290-3G	Gouging 1/4-1/2" Wide	50	5-15	
1501290	6290-R	Rivet Cutting	45	5-15	
1800495	6290-1HA	Heating	12	12	
1800496	6290-2HA	Heating	14	14	

NOTE: 6290-HA cannot be used on 2101 and 3101 Cutting Attachments.

Cleaning Instructions: Use Tip Cleaner C-9 (P/N 9000156).

6290-G

6290-HA

6290-R

Alternate Fuel Cutting Tips For use with Positive Pressure "E" Torches

ALTERNATE FUEL TIPS



Plated Shell

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

6290-N PART NO.	6290-NX PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	CUTTING ORIFICE DRILL SIZE
1500970	1501200	Light Gauge To 3/16	00ON& 00ONX	15-30	5-15	#68
-	1501210	3/16-3/8	0ONX	20-30	5-15	#64
-	1501220	3/8-5/8	ONX	30-40	5-15	#60
-	1501230	5/8-1	1NX	35-50	5-15	#56
-	1501240	1-2	2NX	40-55	5-15	#52
-	1501250	2-3	3NX	45-60	5-15	#48
-	1501260	3-6	4NX	50-75	5-15	#42
-	1501270	6-8	5NX	65-80	5-15	#35
-	1501280	8-12	6NX	70-90	5-15	#30



Plated Shell

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

6290-NFF PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	CUTTING ORIFICE DRILL SIZE
1501020	To 5/8	1NFF	20-30	5-15	#56
1501030	5/8-2	2NFF	30-55	5-15	#53
1501040	2-4	3NFF	45-65	5-15	#47
1501050	4-7	4NFF	55-75	5-15	#42
1501060	7-10	5NFF	60-80	5-15	#35
1501070	10-12	6NFF	80-90	5-15	#31



Plated Shell

6290-NXM Oxy-MAPP® and 6290-NXP Oxy-Propylene Tip Chart

6290-NXM PART NO.	6290-NXP PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	CUTTING ORIFICE DRILL SIZE
1501530	1502150	Light Gauge To 3/16	00ONXM/NXP	15-30	5-15	#68
1501540	1502152	3/16-3/8	0ONXM/NXP	20-30	5-15	#64
1501550	1502154	3/8-5/8	ONXM/NXP	30-40	5-15	#60
1501560	1502156	5/8-1	1NXM/NXP	35-50	5-15	#56
1501570	1502158	1-2	2NXM/NXP	40-55	5-15	#52
1501580	1502160	2-3	3NXM/NXP	45-60	5-15	#48
1501590	1502162	3-6	4NXM/NXP	50-75	5-15	#42
1501600	1502164	6-8	5NXM/NXP	65-80	5-15	#35
1501610	1502166	8-12	6NXM/NXP	70-90	5-15	#30

3690-P Oxy-Propane, Natural Gas Tip Chart

PART NO.	TIP SIZE	METAL THICKNESS INCHES	OXYGEN PSIG	FUEL GAS PSIG	WHERE USED
1500600	OOP	To 1/4	15-30	5	36 Cutting Attachments (No Longer Available)
1500610	OP	1/4-1/2	20-25	5	
1500620	1P	1/2-1	25-45	5	



Unplated Shell

CLEANING INSTRUCTIONS: The wire brush included with tip cleaner E-9 (P/N 9000160) 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.

Alternate Fuel Cutting Tips For Use With Low Pressure Injector "F" Torches

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



Plated Shell

6290-N PART NO.	6290-NX PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	CUTTING ORIFICE DRILL SIZE
1500970	1501200	Light Gauge To 3/16	OON& OONX	15-30	4oz. TO 2 PSIG	#68
-	1501210	3/16-3/8	OONX	20-30	4oz. TO 2 PSIG	#64
-	1501220	3/8-5/8	ONX	30-40	4oz. TO 2 PSIG	#60
-	1501230	5/8-1	1NX	35-50	4oz. TO 2 PSIG	#56
-	1501240	1-2	2NX	40-55	4oz. TO 2 PSIG	#52
-	1501250	2-3	3NX	45-60	4oz. TO 2 PSIG	#48
-	1501260	3-6	4NX	50-75	4oz. TO 2 PSIG	#42
-	1501270	6-8	5NX	65-80	4oz. TO 2 PSIG	#35
-	1501280	8-12	6NX	70-90	4oz. TO 2 PSIG	#30

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



Plated Shell

6290-NFF PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	CUTTING ORIFICE DRILL SIZE
1501020	To 5/8	1NFF	20-30	4oz. TO 2 PSIG	#56
1501030	5/8-2	2NFF	30-55	4oz. TO 2 PSIG	#53
1501040	2-4	3NFF	45-65	4oz. TO 2 PSIG	#47
1501050	4-7	4NFF	55-75	4oz. TO 2 PSIG	#42
1051060	7-10	5NFF	60-80	4oz. TO 2 PSIG	#35
1051070	10-12	6NFF	80-90	4oz. TO 2 PSIG	#31

6290-NXM Oxy-MAPP® and 6290-NXP Oxy-Propylene Tip Chart



Plated Shell

6290-NXM PART NO.	6290-NXP PART NO.	PLATE THICKNESS INCHES	TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	CUTTING ORIFICE DRILL SIZE
1501530	1502150	Light Gauge To 3/16	OONXM/NXP	15-30	4oz. TO 2 PSIG	#68
1501540	1502152	3/16-3/8	OONXM/NXP	20-30	4oz. TO 2 PSIG	#64
1501550	1502154	3/8-5/8	ONXM/NXP	30-40	4oz. TO 2 PSIG	#60
1501560	1502156	5/8-1	1NXM/NXP	35-50	4oz. TO 2 PSIG	#56
1501570	1502158	1-2	2NXM/NXP	40-55	4oz. TO 2 PSIG	#52
1501580	1502160	2-3	3NXM/NXP	45-60	4oz. TO 2 PSIG	#48
1501590	1502162	3-6	4NXM/NXP	50-75	4oz. TO 2 PSIG	#42
1501600	1502164	6-8	5NXM/NXP	65-80	4oz. TO 2 PSIG	#35
1501610	1502166	8-12	6NXM/NXP	70-90	4oz. TO 2 PSIG	#30

3690-P Oxy-Propane, Natural Gas Tip Chart



Unplated Shell

PART NO.	TIP SIZE	METAL THICKNESS INCHES	OXYGEN PSIG	FUEL GAS PSIG	WHERE USED
1500600	OOP	To 1/4	15-30	4oz. TO 2 PSIG	36 Cutting Attachments (No Longer Available)
1500610	OP	1/4-1/2	20-25	4oz. TO 2 PSIG	
1500620	1P	1/2-1	25-45	4oz. TO 2 PSIG	

CLEANING INSTRUCTIONS: The wire brush included with tip cleaner E-9 (P/N 9000160) 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.

Alternate Fuel Specialty Tips For Use With Low Pressure Injector "F" Torches

ALTERNATE FUEL TIPS



6290 Oxy-Propane, Propylene, Natural Gas & Mapp® Gas Specialty Tips

PART NO.	TIP SIZE	MAPP® PART NO.	MAPP® TIP SIZE	APPLICATION	OXYGEN PSIG	FUEL GAS PSIG	WHERE USED
1500940	6290-1GG	1500944	6290-1GGM	GOUGING 1/8-1/4" WIDE	35	4OZ. TO 2 PSIG	RECOMMENDED ONLY FOR STRAIGHT CUTTING TORCHES
1500950	6290-2GG	1500954	6290-2GGM	GOUGING 3/16-3/8" WIDE	50	4OZ. TO 2 PSIG	
1500960	6290-3GG	1500964	6290-3GGM	GOUGING 1/4-1/2" WIDE	50	4OZ. TO 2 PSIG	
9100516	H-62-1P	-	-	HEATING*	45	4OZ. TO 2 PSIG	
9100518	H-62-2P	-	-	HEATING*	50	4OZ. TO 2 PSIG	
9100520	H-62-3P	-	-	HEATING*	55	4OZ. TO 2 PSIG	
1501090	6290-2NFFR	-	-	RIVET CUTTING*	45	4OZ. TO 2 PSIG	
1501100	6290-NFW	-	-	RIVET WASHING	50	4OZ. TO 2 PSIG	
1501110	6290-8NFW	-	-	RIVET WASHING	50	4OZ. TO 2 PSIG	
1501054	6290-0NFFL	-	-	8" CUTTING TIP	80	4OZ. TO 2 PSIG	
1501055	6290-1NFFL	-	-	8" CUTTING TIP	80	4OZ. TO 2 PSIG	
1501053	6290-2NFFL	-	-	8" CUTTING TIP	80	4OZ. TO 2 PSIG	
1501051	6290-4NFFL	-	-	8" CUTTING TIP	80	4OZ. TO 2 PSIG	
1501052	6290-6NFFL	-	-	8" CUTTING TIP	80	4OZ. TO 2 PSIG	

*NOTE: Heating Tips and Rivet Cutting Tips cannot be used on Harris Pro Series Cutting Attachments or 880 Torch.

For Use With Positive Pressure "E" Torches 6290 Oxy-Propane, Propylene, Natural Gas & Mapp® Gas Specialty Tips



TIP PART NO.	TIP SIZE	MAPP® PART NO.	MAPP® TIP SIZE	APPLICATION	OXYGEN PSIG	FUEL GAS PSIG	WHERE USED
1500940	6290-1GG	1500944	6290-1GGM	GOUGING 1/8-1/4" WIDE	35	5-15	RECOMMENDED ONLY FOR STRAIGHT CUTTING TORCHES
1500950	6290-2GG	1500954	6290-2GGM	GOUGING 3/16-3/8" WIDE	50	5-15	
1500960	6290-3GG	1500964	6290-3GGM	GOUGING 1/4-1/2" WIDE	50	5-15	
9100516	H-62-1P	-	-	HEATING*	45	5-15	
9100518	H-62-2P	-	-	HEATING*	50	5-15	
9100520	H-62-3P	-	-	HEATING*	55	5-15	
1501090	6290-2NFFR	-	-	RIVET CUTTING*	45	5-15	
1501100	6290-NFW	-	-	RIVET WASHING	50	5-15	
1501110	6290-8NFW	-	-	RIVET WASHING	50	5-15	
1501054	6290-0NFFL	-	-	8" CUTTING TIP	80	5-15	
1501055	6290-1NFFL	-	-	8" CUTTING TIP	80	5-15	
1501053	6290-2NFFL	-	-	8" CUTTING TIP	80	5-15	
1501051	6290-4NFFL	-	-	8" CUTTING TIP	80	5-15	
1501052	6290-6NFFL	-	-	8" CUTTING TIP	80	5-15	

*NOTE: Heating Tips and Rivet Cutting Tips cannot be used on Harris Pro Series Cutting Attachments or 880 Torch.

Machine Cutting Tips

VVC Plated Shell



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

VVCU Unplated Shell



6290-VVC High Speed Oxy- Propane/Natural Gas Cutting Tip Chart-Plated Shell (.088" Cup Depth)

PART NO.	TIP SIZE	PLATE THICKNESS INCHES	CUTTING SPEED I.P.M.	CUTTING OXYGEN PSIG	PREHEAT OXYGEN PSIG		PREHEAT FUEL PSIG	CUTTING OXYGEN CONSUMPTION SCFH	LOW PREHEAT OXYGEN CONSUMPTION SCFH	PROPANE CONSUMPTION SCFH	NATURAL GAS CONSUMPTION SCFH	APPROX. KERF IN.
					HIGH	LOW						
1501310	5/0	3/16	20	40	15	8	4 oz.-2PSIG	15	30	6	15	.05
1501320	4/0	1/4	20	50	15	10	4 oz.-2PSIG	40	35	7	18	.06
1501330	3/0	3/8	18	75	35	10	4 oz.-2PSIG	80	35	7	18	.07
1501340	2/0	1/2	18	75	35	10	4 oz.-2PSIG	90	35	7	18	.07
1501350	0	3/4	15	90	35	10	4 oz.-2PSIG	125	35	7	18	.08
1501360	0 1/2	1 1/4	14	100	35	12	4 oz.-2PSIG	170	40	8	20	.08
1501370	1	2	13	100	35	12	4 oz.-2PSIG	200	40	8	20	.09
1501380	1 1/2	3	9	100	35	12	4 oz.-2PSIG	250	40	8	20	.11
1501390	2	4	7	100	35	12	4 oz.-2PSIG	325	40	8	20	.12
1501400	2 1/2	5	6	100	35	12	4 oz.-2PSIG	395	40	8	20	.13
1501410	3	6	5	100	40	12	4 oz.-2PSIG	425	40	8	20	.14
1501420	4	8	5	100	40	12	4 oz.-2PSIG	525	40	8	20	.16
1501430	5	9	4	90	40	-	4 oz.-2PSIG	580	100	20	50	.20
1501440	5 1/2	10	4	90	40	-	4 oz.-2PSIG	600	100	20	50	.25
1501120	5NH	10	4	60	40	-	4 oz.-2PSIG	600	100	20	50	.25
1501130	6NH	11	4	60	40	-	4 oz.-2PSIG	690	100	20	50	.25
1501140	7NH	12	4	60	40	-	4 oz.-2PSIG	825	100	20	50	.25
1501190	8NH	15	3	60	40	-	4 oz.-2PSIG	925	100	20	50	.30

NOTE: NH Tips are not plated

6290-VVCU High Speed Oxy- Propane/Natural Gas Cutting Tip Chart-Unplated Shell (.062" Cup Depth)

PART NO.	TIP SIZE	PLATE THICKNESS INCHES	CUTTING SPEED I.P.M.	CUTTING OXYGEN PSIG	PREHEAT OXYGEN PSIG		PREHEAT FUEL PSIG	CUTTING OXYGEN CONSUMPTION SCFH	LOW PREHEAT OXYGEN CONSUMPTION SCFH	PROPANE CONSUMPTION SCFH	NATURAL GAS CONSUMPTION SCFH	APPROX. KERF IN.
					HIGH	LOW						
1502120	5/0	3/16	20	40	15	8	4 oz.-2PSIG	15	30	6	15	.05
1502121	4/0	1/4	20	50	15	10	4 oz.-2PSIG	40	35	7	18	.06
1502122	3/0	3/8	18	75	35	10	4 oz.-2PSIG	80	35	7	18	.07
1502123	2/0	1/2	18	75	35	10	4 oz.-2PSIG	90	35	7	18	.07
1502124	0	3/4	15	90	35	10	4 oz.-2PSIG	125	35	7	18	.08
1502125	0 1/2	1 1/4	14	100	35	12	4 oz.-2PSIG	170	40	8	20	.08
1502126	1	2	13	100	35	12	4 oz.-2PSIG	200	40	8	20	.09
1502127	1 1/2	3	9	100	35	12	4 oz.-2PSIG	250	40	8	20	.11
1502128	2	4	7	100	35	12	4 oz.-2PSIG	325	40	8	20	.12
1502129	2 1/2	5	6	100	35	12	4 oz.-2PSIG	395	40	8	20	.13
1502130	3	6	5	100	40	12	4 oz.-2PSIG	425	40	8	20	.14
1502131	4	8	5	100	40	12	4 oz.-2PSIG	525	40	8	20	.16
1502132	5	9	4	90	40	-	4 oz.-2PSIG	580	100	20	50	.20

NOTES: (1) Use next size larger tip with same pressure for contour cutting.
 (2) Use highly carburizing preheat flame for light plate cutting.
 (3) Cutting oxygen pressure should be measured at top of torch.

Machine Cutting Tips

VVCM Unplated Shell



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

VVCP Plated Shell



6290-VVCM High Speed Oxy- MAPP® Cutting Tip Chart-Unplated Shell (.010 Cup Depth)

PART NO.	TIP SIZE	PLATE THICKNESS INCHES	CUTTING SPEED I.P.M.	CUTTING OXYGEN PSIG	PREHEAT OXYGEN PSIG		PREHEAT FUEL PSIG	CUTTING OXYGEN CONSUMPTION SCFH	LOW PREHEAT OXYGEN CONSUMPTION SCFH	MAPP® CONSUMPTION SCFH	APPROX. KERF IN.
					HIGH	LOW					
1501620	5/0	3/16	20	40	15	8	4 oz.-2PSIG	15	30	6	.05
1501630	4/0	1/4	20	50	15	10	4 oz.-2PSIG	40	35	7	.06
1501640	3/0	3/8	18	75	35	10	4 oz.-2PSIG	80	35	7	.07
1501650	2/0	1/2	18	75	35	10	4 oz.-2PSIG	90	35	7	.07
1501660	0	3/4	15	90	35	10	4 oz.-2PSIG	125	35	7	.08
1501670	0 1/2	1 1/4	14	100	35	12	4 oz.-2PSIG	170	40	8	.08
1501680	1	2	13	100	35	12	4 oz.-2PSIG	200	40	8	.09
1501690	1 1/2	3	9	100	35	12	4 oz.-2PSIG	250	40	8	.11
1501700	2	4	7	100	35	12	4 oz.-2PSIG	325	40	8	.12
1501710	2 1/2	5	6	100	35	12	4 oz.-2PSIG	395	40	8	.13
1501720	3	6	5	100	40	12	4 oz.-2PSIG	425	40	8	.14
1501730	4	8	5	100	40	12	4 oz.-2PSIG	525	40	8	.16
1501740	5	9	4	90	40	-	4 oz.-2PSIG	580	100	20	.20

6290-VVCP High Speed Oxy- Propylene Cutting Tip Chart-Plated Shell (.034 Cup Depth)

PART NO.	TIP SIZE	PLATE THICKNESS INCHES	CUTTING SPEED I.P.M.	CUTTING OXYGEN PSIG	PREHEAT OXYGEN PSIG		PREHEAT FUEL PSIG	CUTTING OXYGEN CONSUMPTION SCFH	LOW PREHEAT OXYGEN CONSUMPTION SCFH	PROPYLENE CONSUMPTION SCFH	APPROX. KERF IN.
					HIGH	LOW					
1502200	5/0	3/16	20	40	12	8	2	15	32	13	.05
1502202	4/0	1/4	20	50	12	8	2	40	32	13	.06
1502204	3/0	3/8	18	75	25	8	2	80	32	13	.07
1502206	2/0	1/2	18	75	25	8	2	90	32	13	.07
1502208	0	3/4	15	90	25	8	2	125	32	13	.08
1502210	0 1/2	1 1/4	14	100	25	8	2	170	32	13	.08
1502212	1	2	13	100	25	10	2	200	40	16	.09
1502214	1 1/2	3	9	100	25	10	2	250	40	16	.11
1502216	2	4	7	100	25	10	2	325	40	16	.12
1502218	2 1/2	5	6	100	30	10	2	395	40	16	.13
1502220	3	6	5	100	30	10	2	425	40	16	.14
1502222	4	8	5	100	30	10	2	525	40	16	.16
1502224	5	9	4	90	30	10	2	580	40	16	.20

NOTES: (1) Use next size larger tip with same pressure for contour cutting.
 (2) Use highly carburizing preheat flame for light plate cutting.
 (3) Cutting oxygen pressure should be measured at top of torch.

CLEANING INSTRUCTIONS: The wire brush included with tip cleaner E-9 (P/N 9000160) 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.



E-9 TIP
Two Piece Cleaners
P/N: 9000160

High Capacity Tips

Special Order Only

For Model 80 Torch



Special Order Only

For Model 136-2 Torch



Special Order Only

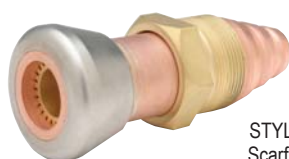
For Model 6000 Torch



STYLE 213
Cutting Tip

Special Order Only

For Model 6075 Scarfing Torch



STYLE 250
Scarfing Tip

8090 Machine Cutting Tips Oxy-Propane, Natural Gas Tip Chart

PART NO.	TIP NO.	METAL THICKNESS INCHES	SPEED IN./MIN.	OPERATING PRESSURES PSIG	ORIFICE DIA INCHES	GAS FLOW CU.FT./HR.
1501910	0	8-12	6-3	CUT. OXYGEN - 30-60	5/32	600-1500
1501920	1			P.H.OXYGEN - 20-40	3/16	200-375
				PROPANE - 10-15	-	55-105
1501920	1	12-16	6-3	CUT. OXYGEN - 30-60	3/16	800-2500
1501930	2			P.H.OXYGEN - 25-50	1/4	250-425
				PROPANE - 10-20	-	56-125
1501930	2	16-20	4-2	CUT. OXYGEN - 25-50	1/4	1900-3600
1501940	3			P.H.OXYGEN - 25-50	9/32	250-425
				PROPANE - 10-20	-	55-125
1501940	3	20-25	3-1 1/2	CUT. OXYGEN - 25-50	9/32	1900-3600
1501950	4			P.H.OXYGEN - 25-50	5/16	250-425
				PROPANE - 10-20	-	55-125
1501950	4	OVER 25	3-1	CUT. OXYGEN - 40-90	5/16	2100-4400
1501960	4 1/2			P.H.OXYGEN - 25-50	11/32	250-425
				PROPANE - 10-20	-	55-125

136 Style One-Piece Oxy-Propane, Natural Gas Tip Chart

PART NO.	TIP SIZE	PLATE THICKNESS INCHES	OPERATING PRESSURE PSIG	GAS FLOW CU.FT./HR.
136-11	11	12-19	Fuel Gas 8-15 Oxygen 60 to 80	60 to 120 950 to 2900
136-13	13	19-28	Fuel Gas 10-15 Oxygen 60 to 80	60 to 120 2100 to 4000
136-15	15	28-36	Fuel Gas 15-20 Oxygen 80 to 100	80 to 150 2500 to 4800

Style 213 Cutting Tips Oxy-Propane, Natural Gas*

STYLE	SIZE	CUT THICKNESS	OPERATING PRESSURES	GAS FLOW Cu. Ft/Hour
213	10	20"-40"	Fuel Gas 15-20 PSIG Oxygen 80-120 PSIG	130-350 4000-5500
213	15	40"-50"	Fuel Gas 15-20 PSIG Oxygen 80-130 PSIG	150-400 5000-6500
213	20	Over 50"	Fuel Gas 15-20 PSIG Oxygen 80-120 PSIG	180-450 6000-8000

*NOT FOR USE WITH ACETYLENE

**THREE HOSE OPTION RECOMMENDED FOR CUTTING OVER 50"

Style 250 Scarfing Tip - Propane, Natural Gas*

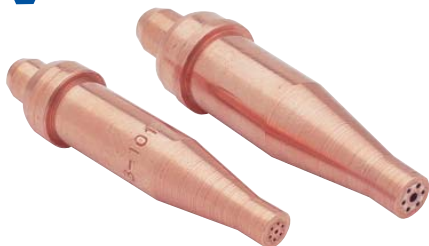
STYLE	SIZE	SCARF WIDTH	OPERATING PRESSURES	GAS FLOW Cu. Ft/Hour
250	18	Up to 2 1/2"	Fuel Gas 15-20 PSIG Oxygen 80-120 PSIG	130-350 4000-5500

*NOT FOR USE WITH ACETYLENE

For proper cutting performance the following must be adhered to:

- ▶ Maximum length of 3/8" hose is 25 feet. For longer runs, use 1/2" hose with a 25ft. 3/8" whip hose.
- ▶ Oxygen supply and oxygen regulator must be capable of flows shown on cutting tip chart.

V-Series Cutting Tips



VI-IOI and V3-IOI Oxy-Acetylene Tip Chart - One Piece

TIP SIZE	V1-101 TIPS PART NO.	V3-101 TIPS PART NO.	PLATE THICKNESS INCHES	OXYGEN PRESSURE PSIG	ACETYLENE PRESSURE PSIG	CUTTING ORIFICE DRILL SIZE
000	1502088	1502080	1/8	20-30	5	#70
00	1502089	1502081	1/8-5/16	20-30	5	#69
0	1502090	1502082	5/16-5/8	30-40	7	#61
1	1502091	1502083	5/8-1	40-50	7	#56
2	1502092	1502084	1-2	45-55	8	#53
3	1502093	1502085	2-3	50-60	9	#50
4	1502094	1502086	3-4	60-75	10	#46
5	1502095	1502136	4-6	70-80	12	#39
6*	1502096	1502137	6	75-80	15	#31

*For optimal performance, use 3/8" I.D. hose for tip size 6 and larger

VI-IOI AC Oxy-Acetylene Tip Chart - Two Piece

TIP SIZE	V1-101 AC TIPS PART NO.	PLATE THICKNESS INCHES	OXYGEN PRESSURE PSIG	ACETYLENE PRESSURE PSIG	CUTTING ORIFICE INCHES
000	1502069	1/8	20-25	3-5	.031
00	1502070	1/8-1/4	20-25	3-5	.036
0	1502071	1/4-1/2	25-35	7	.040
1	1502072	1/2-3/4	30-35	3-5	.046
2	1502073	3/4-1 1/2	35-45	3-7	.059
3	1502074	1 1/2-3 1/2	40-50	4-10	.067
4	1502075	1 1/2 -2 1/2	40-50	5-10	.093
5	1502076	2 1/2-3	45-55	5-13	.110
6*	1502077	5-8	45-55	7-14	.120



I-GPN and 3-GPN LP/Natural Gas Tip Chart - Two Piece

TIP SIZE	1-GPN TIPS PART NO.	3-GPN TIPS PART NO.	PLATE THICKNESS INCHES	OXYGEN PRESSURE PSIG	FUEL GAS** PRESSURE PSIG	CUTTING ORIFICE DRILL SIZE
000	1502300	1502309	1/8	20-25	3-5	#71
00	1502301	1502310	1/4	20-25	3-5	#67
0	1502302	1502311	3/8-1/2	25-35	3-5	#60
1	1502303	1502312	3/4	30-35	4-6	#56
2	1502304	1502313	1-1 1/2	35-45	4-9	#53
3	1502305	1502314	2-2 1/2	40-50	5-10	#50
4	1502306	1502315	3	45-50	8-12	#45
5	1502307	1502316	4-5	45-55	8-12	#39
6*	1502308	-	6	45-55	10-15	#31

*When using "F" injector mixer fuel gas pressure should be 4oz - 2lbs.

I-GPP and 3-GPP Propylene/MAPP® Tip Chart - Two Piece

TIP SIZE	1-GPP TIPS PART NO.	3-GPP TIPS PART NO.	PLATE THICKNESS INCHES	OXYGEN** PRESSURE PSIG	FUEL GAS PRESSURE PSIG	CUTTING ORIFICE DRILL SIZE
000	1502317	1502330	1/8"	20-25	3-5	71
00	1502318	1502331	1/4"	20-25	3-5	67
0	1502319	1502332	3/8 - 1/2"	25-35	3-5	60
1	1502320	1502333	3/4"	30-35	4-6	56
2	1502321	1502334	1 - 1 1/2"	35-45	4-9	53
3	1502322	1502335	2 - 2 1/2"	40-50	5-10	50
4	1502323	1502336	3	45-50	8-12	45
5	1502324	1502337	4-5	45-55	8-12	39
6	1502325		6-8	45-65	10-15	31

*For optimal performance, use 3/8" I.D. hose for tip size 6 and larger.

**When using "F" injector mixer fuel gas pressure should be 4oz - 2lbs.



Acetylene Welding, Brazing and Heating Tips

23A90 PART NO.	1390 PART NO.	5090 PART NO.	8490 PART NO.	TIP SIZE	METAL THICKNESS INCHES	OXYGEN PSIG	ACETYLENE PSIG
1600840	1600020	1601690	-	0	1/64	1	1
1600850	1600030	1601700	-	1	1/32	1	1
1600860	1600040	1601710	1601990	2	3/64	2	2
1600870	1600050	1601730	-	3	1/16	3	3
1600880	1600060	1601740	1602010	4	3/32	4	4
1600890	1600070	1601760	-	5	1/8	5	5
1600900	1600080	1601780	1602030	6	3/16	6	6
1600910	1600090	1601800	-	7	1/4	7	7
1600920	1600100	1601810	1602060	8	5/16	8	8
1600930	1600140	1601830	-	9	3/8	9	9
1600940	1600150	1601840	-	10	1/2	10	10
1600960	1600160	-	-	13	3/4	13	13
1600970	-	-	-	15	1	15	15
-	1800025	-	-	HA	HEATING	5	5
-	-	-	1602040	6-65	HEATING	8	8

HEATING TIPS



23A90
23/64" - 26



5090
5/16" - 27



1390
3/8" - 24



8490
1/4" - 27



1390-HA
3/8" - 24



8490-6-65
1/4" - 27

Tip Tubes for Separable Welding, Brazing and Heating Tips

TORCH HANDLE	MIXER	TIP TUBE	TIP
43-2,63-2*,18-5	E-43	8593	1390-0 THRU 10,HA
	E2-43	T-43	1390-13
85	D-85	8593	1390-0-10,HA
	H-16-2E	8593	1390-0 THRU 10,HA
16,19,50-9	H-16-E	TH-50-2	8490-2 THRU 8,6-65
	H-16-E	D-50-C	1390-0 THRU 10,HA
15	B-15-3	TH-50-2	8490-2 THRU 8,6-65
	B-15-3	D-50-C	1390-0 THRU 8
2000,3000*	W-2030	8593	1390-1 THRU 10,HA
	H-2030	T-43	1390-13

* Model 2000, 3000 and 63-2 Torch Handles are no longer available.

1/4" - 27



TH-50-2
P/N 1601590
Tube Length: 5-1/2"

TH-50-2XL
P/N 1601596
Tube Length: 7-1/4"

1/4" - 27

5/16" - 27



D-50-C
P/N 9100379
LENGTH: 4"

5/16" - 27

D-50-CXL
P/N 9100872
LENGTH: 7"



8593
P/N 9003678
LENGTH: 4"

23/64" - 26



8493-N
P/N 9003656
LENGTH: 5"

1/4" - 32

1/4" - 27



T-43
P/N 9100322
LENGTH: 9.8"

1/2" - 25

See page 17, 18 and 19 for appropriate mixer usage.

Acetylene Heating Tips and Assemblies

HANDLES	MIXER	HEATING ASSEMBLY LESS MIXER	HEATING TIP PART NO.	HEATING ASSEMBLY WITH MIXER	HEATING ASSEMBLY PART NO.
43-2, 63-2*	E-43	J-63-1	1800710	H-63-1	1800810
	E-43	J-63-2	1800720	H-63-2	1800820
	E2-43	J-63-3	1800730	H-63-3	1800830
	E2-43	J-63-4	1800740	H-63-4	1800840
43-2	E3-43/F-43	J-43-5	1800117	H-43-5	1800115
85	D-85	J-63-1	1800710	H-85-1	1800500
	D-85	J-63-2	1800720	H-85-2	1800510
16	H-16-E	J-16-1	1800102	H-16-1	1800100
	H-16-E	J-16-2	1800112	H-16-2	1800110
	H-16-2E	J-63-1	1800710		
	H-16-2E	J-63-2	1800720		
2000*	W-2030	J-63-1	1800710	NOT AVAILABLE AS AN ASSEMBLY	
	W-2030	J-63-2	1800720		
	H-2030	J-63-3	1800730		
	H-2030	J-63-4	1800740		
3000*	H-2030	J-63-3	1800730	NOT AVAILABLE AS AN ASSEMBLY	
	H-2030	J-63-4	1800740		
	H-2030	J-43-5	1800117		

* Model 2000, 3000 and 63-2 Torch Handles are no longer available.



Handle



Mixer



Tube and Tip Assembly



Tube, Tip and Mixer Assembly

"J" Series Heating Tip Information

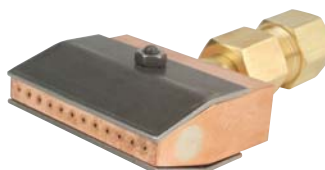
TIP SIZE	ORIFICE SIZE	OXYGEN & ACETYLENE "EQUAL PRESSURE"		ACETYLENE FLOWS		APPROXIMATE GROSS HEATING OUTPUT BTU/HR.	
		MAX. PSI	MIN. PSI	MAX. FLOW CFH	MIN. FLOW CFH	MAX.	MIN.
1	(6) #60 (.040)	6	2	35	20	51,500	29,500
2	(8) #60 (.040)	7	3	50*	30	74,000	44,000
3	(8) #56 (.0465)	8	4	80*	50*	118,000	74,000
4	(12) #56 (.0465)	15	8	140*	80*	206,500	118,000
5	(13) #52 (.0635)	OXY. 20 ACET. 15	OXY. 12 ACET. 8	300*	160*	442,500	236,000

1. Maximum Pressure - Neutral flame with no flame blow-off (highest stable flame). 2. Minimum Pressure - Neutral flame with no flame pop-out (lowest stable flame). 3. Acetylene flows shown - Oxygen flow theoretically 1.1 of acetylene flow for neutral flame. 4. Heat output calculated with 1475 BTU/cu.ft. heating 3/8" I.D. hose recommended for tip sizes 3, 4 and 5.

*Exceeds the capacity of one standard 320 CF acetylene cylinder (1/7 rule).

Oxy-Acetylene RBA Flame Cleaning Heads

PART NO.	MODEL NO.	WIDTH	PRESSURE PSIG		FLOW OXYGEN	C.F.H. ACET.
			OXYGEN	ACET.		
1800440	RBA-2	2"	6-10	6-10	29-40	25-35
1800450	RBA-4	4"	10-12	10-12	55-59	49-53
1800460	RBA-6	6"	12-14	12-14	63-66	50-58



Use Torch Handle 43-2 with E2-43 Mixer Handle and select Model 2393 tip tube from page 23.

Alternate Fuel Tips Brazing and Light Heating Tips for Propane and Natural Gas

Brazing Tips



3/8" - 24
1390-N



1/4" - 27
8490-N

Low Pressure "F" Injector Brazing Equipment

HEAVY DUTY* HANDLES	MIXER	PART NO.	TIP TUBES	1390-N TIPS
43-2, 63-2* & 18	B-43-4	9100290	8593	4N
	B-43-5	9100292		5N
	B-43-6	9100294		6N
	B-43-7	9100296		7N
	B-43-8	9100298		8N
	B-43-10	9100302		10N
	B-43-15	9100304	T-43	13N, 15N
	B-43-N	9100306	T-43	20N, 30N, 80N

For other handle, mixer and tip tube combinations, see page 19.

*Model 63-2 torch handle is no longer available.

1390-N/8490-N Tip Chart for Low Pressure "F" Injector Equipment

1390-N PART NO.	8490-N PART NO.	TIP SIZE	OXYGEN PSIG	FUEL GAS 4oz. TO 2 PSIG
1600180	-	2N	15	
1600190	-	3N	15	
1600200	1602090	4N	20	
1600210	1602100	5N	25	
1600220	1602110	6N	25	
1600230	1602120	7N	30	
1600240	1602130	8N	30	
1600250	-	9N	35	
1600260	-	10N	40	
1600270	-	13N	40	
1600280	-	15N	45	
1600290	-	20N	50	
1600300	-	30N	50	
1600310	-	80N	60	
1800020	-	1390-H	50	
1800098	-	1390-3H	50	
1800015	-	1390-B	50	
-	1602040	8490-6-65	50	

NOTE: All tips on this page require separate tip tubes, page 20.

Heating Tips



1/2" - 25
1390-3H



3/8" - 24
1390-H



3/8" - 24
1390-B



1/4" - 27
8490-6-65

4OZ. TO 2 PSIG

Brazing Tip Chart for Positive Pressure "E" Equipment

TIP SERIES AND SIZE	OXYGEN PSIG	FUEL GAS PSIG	OXYGEN PSIG	FUEL GAS PSIG
1390-N 8490-N	E-43, D-85, H-16-E, AND H-16-2E MIXERS		PRO SERIES W-2030 MIXER	
4N	2	1	4	1
5N	2	1	4	1
6N	2	2	5	1
7N	3	2	5	1
8N	3	2	5	1
9N	4	3	6	1
10N	4	3	6	1
E2-43 AND E3-43 (F-43)			PRO SERIES H-2030 MIXER	
13N	7	4	5	1
15N	12	8	6	1
20N	15	12	23	4
30N	18	14	26	5
810N	20	16	30	5

1390 Light Heating Tip Chart for Positive Pressure "E" Equipment

TIP SIZE	OXYGEN PSIG	FUEL GAS PSIG	OXYGEN PSIG	FUEL GAS PSIG	BTUS/HR. 1000'S
E-43, D-85, H-16			PRO SERIES W2030 MIXER		
1390-B	5-25	2-12	5-25	5-7	30-100
1390-H	5-25	2-12	5-25	5-7	30-100



3/8" - 24
1390-B



3/8" - 24
1390-H

K-43, 89-3 Alternate Fuel Heating Assemblies



The Harris 89-3 heating and soldering torch is designed to operate with natural gas (4oz. to 2 lbs.) or propane in combination with 50 P.S.I. to 100 P.S.I. of compressed air only. The 89-3 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.

APPLICATIONS

- ▶ Large area soft soldering
- ▶ Preheating castings for welding
- ▶ Heating pipes in chemical plants
- ▶ Mold drying
- ▶ Metal cleaning (Brewery Vats, Rubber Molds, etc.)
- ▶ Burning plant
- ▶ Heating forming dies prior to hard facing
- ▶ Stress relieving die shoes
- ▶ For use with compressed air only
- ▶ Max. BTU output
130,000 BTU with propane
85,000 BTU with natural gas



81-12 Tip

89-3 Heating & Soldering Torch

MODEL NO.	PART NO.
89-3	1400382

*Tip not included with torch

81-12 Heating Tip

MODEL NO.	PART NO.
81-12	1601950

- ▶ Bell-shaped design has wide flame adjustment eliminating the need for numerous sizes.
- ▶ Stainless steel construction for long life and heat resistance.



K - 43 Heating Assemblies*

Oxy-Propane / Propylene Based Fuel, Oxy-Natural Gas 10 PSI or More**

PART NO.	MODEL NO.	INCLUDES	TUBE LENGTH	TOTAL LENGTH
1801350	K-43-1	43-2 HANDLE, E3-43/F-43 MIXER AND 2393-1F TUBE	36"	46"
1801360	K-43-2	43-2 HANDLE, E3-43/F-43 MIXER AND 2393-2F TUBE	28"	38"
1801370	K-43-3	43-2 HANDLE, E3-43/F-43 MIXER AND 2393-3F TUBE	16"	26"
1801380	K-43-4	43-2 HANDLE, E3-43/F-43 MIXER AND 2393-4F TUBE	10"	20"

*Assembly does not include heating tip

** For fuel gas pressures of 10 PSIG or less order B-43-N MIXER (PN 9100306), Model 43-2 handle (PN1401150) and select 2393 Tip
Tube from page 35. Limited to tip sizes 2290 1-3 H or HPM.

2393 Tip Tube, RBP-43 Alternate Fuel Heating Tips

2290-HPM-Heating Tips



For Propylene/Mapp® Gas

MODEL NO.	PART NO.
2290-1HPM	1800136
2290-2HPM	1800146
2290-3HPM	1800156
2290-4HPM	1800166
2290-5HPM	1800176

2290-H-Heating Tips



For Propane / Natural Gas

MODEL NO.	PART NO.
2290-1H	1800130
2290-2H	1800140
2290-3H	1800150
2290-4H	1800160
2290-5H	1800170

2290 - H and HPM Performance Data Chart

2290-H AND HPM	OXYGEN PSIG	OXYGEN SCFH	FUEL GAS PSIG	FUEL GAS SCFH	OXYGEN PSIG	OXYGEN SCFH	FUEL GAS PSIG	FUEL GAS SCFH	PROPANE	PROPYLENE	MAPP®	NATURAL GAS
	CLASSIC E3-43/(F43) MIXER				PRO SERIES H-2030 MIXER				BTU/HR. RATING			
TIP SIZE #1	10	160	4	40	15	160	3	40	103,000	95,000	96,000	65,000
	25	320	12	80	30	320	6	80	205,000	190,000	192,000	130,000
TIP SIZE #2	15	220	7	55	15	220	5	55	141,000	130,000	132,000	90,000
	45	520	22	130	40	520	10	130	333,000	308,000	312,000	212,000
TIP SIZE #3	25	340	8	85	20	340	7	85	218,000	201,000	204,000	139,000
	70	920	25	230	80	920	13	230	590,000	545,000	552,000	375,000
TIP SIZE #4	50	640	10	160	50	640	7	160	410,000	379,000	384,000	216,000
	110	1300	30	325	100	1200	21	325	833,000	770,000	780,000	530,000
TIP SIZE #5	60	720	14	180	60	720	8	180	461,000	427,000	432,000	293,000
	135	1600	40	400	150	1600	23	400	1,025,000	950,000	960,000	652,000

NOTES: (1) For Maximum Flow and BTU output - use 3/8" Hose.
(2) To calculate heat output for Propylene use 2375 BTU/Cu. FT. X Flow CFH.
(3) On continuous duty withdrawal manifolding of cylinders may be required.

2393 Tip Tube (1/2" - 25(M) X 1/2" - 25(M))



Multiple arrangements of 2290-H Heating Tips can be assembled using Harris coupling No. 2327, nipple No. 2357 and standard 1/4" pipe fittings when wider bands of heat are necessary. Capacity of K-43 heating torch is 5 #1-H tips. Use coupling No. 2543-3 to couple 2393 Tip Tubes for extended reach.



2393 Heating Tip Tube Chart

PART NO.	MODEL NO.	LENGTH
1800200	2393-1F	36"
1800210	2393-2F	28"
1800211	2393-2F	28" Straight
1800220	2393-3F	16"
1800221	2393-3F	16" Straight
1800230	2393-4F	10 1/2"
1800231	2393-4F	10 1/2" Straight
1800240	2393-5F	36" Straight
1800200	2393-5F	48" Straight

NOTE: For extended tip life, use Tip Adapter 2357-3 (9000738).

1/2" - 25(F)



RBP-43 TIPS

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

PART NO.	TUBE SIZE	OXYGEN PRESSURE PER SQ. IN.	PROPANE PRESSURE PER SQ. IN.	OXYGEN CUBIC FEET PER HR.	PROPANE CUBIC FEET PER HR.
1800470	RBP-43-2	5-10	4-8	90-120	27-38
1800480	RBP-43-4	10-22	6-12	225-300	65-88
1800490	RBP-43-6	25-55	10-20	490-640	106-146

*Use 43-2 handle and 2393 Tip Tubes.

Harris Straight Line Cutting Machine

The Harris Straight Line Cutting Machine can be used for flame and plasma cutting. Each machine comes with on/off magnets for easy set-up and positive positioning on magnetic material. Included with every machine is a quick-acting manifold which eliminates the need to reset the torch when flame cutting. It's easy to take the machine to the jobsite. The machine is compact, lightweight and has a convenient carrying handle. Cut surfaces are smooth and accurate so that grinding and restarts are basically eliminated.

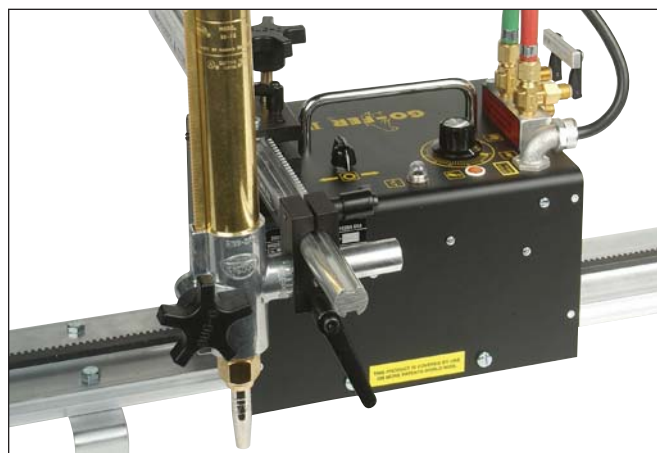
- ▶ Positive rack and pinion drive
- ▶ Wide speed range (5-100 ipm)
- ▶ Dynamic brake
- ▶ Convenient carrying handle
- ▶ Torchholder assembly for standard 1 3/8" barrel/ 32 pitch rack

Technical Data

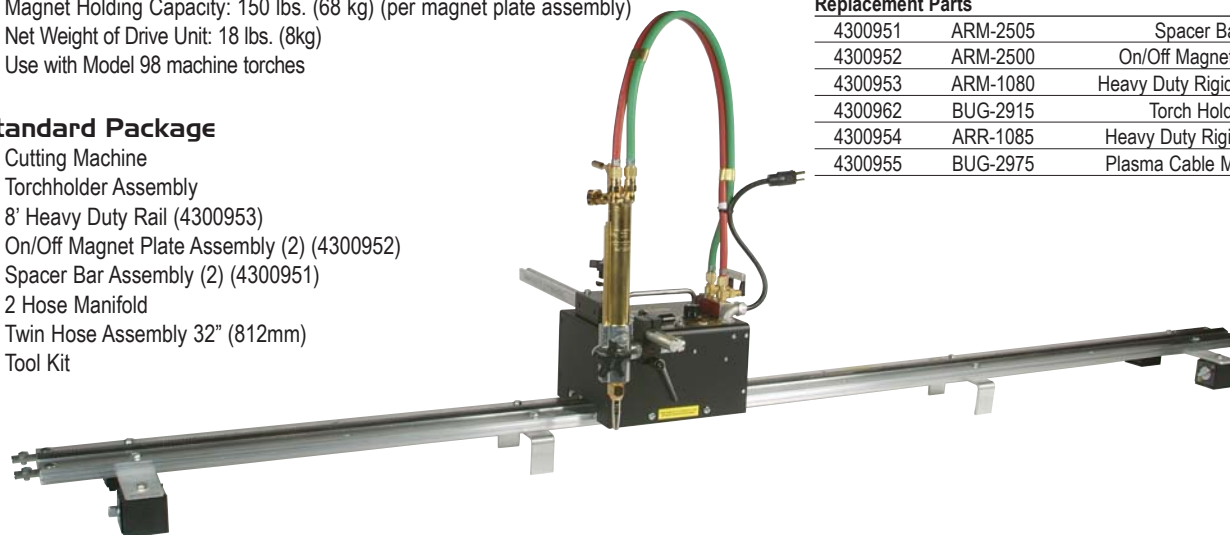
- ▶ Power Requirements: 120 VAC/50-60/1
- ▶ Travel Speed: Infinitely variable from 5- 100 ipm (127-2540 mm/min.)
- ▶ Load Capacity: 15 lbs. (6.8 kg) Vertical 60 lbs. (27.3 kg) Horizontal
- ▶ Magnet Holding Capacity: 150 lbs. (68 kg) (per magnet plate assembly)
- ▶ Net Weight of Drive Unit: 18 lbs. (8kg)
- ▶ Use with Model 98 machine torches

Standard Package

- ▶ Cutting Machine
- ▶ Torchholder Assembly
- ▶ 8' Heavy Duty Rail (4300953)
- ▶ On/Off Magnet Plate Assembly (2) (4300952)
- ▶ Spacer Bar Assembly (2) (4300951)
- ▶ 2 Hose Manifold
- ▶ Twin Hose Assembly 32" (812mm)
- ▶ Tool Kit



PART NO.	MODEL	DESCRIPTION
4300950	GOF-3250-HS	Deluxe Cutting Machine
Replacement Parts		
4300951	ARM-2505	Spacer Bar Assembly
4300952	ARM-2500	On/Off Magnet Plate Assembly
4300953	ARM-1080	Heavy Duty Rigid Rail 93.5" (2.37m)
4300962	BUG-2915	Torch Holder Assembly
4300954	ARR-1085	Heavy Duty Rigid Rail 48" (1.18m)
4300955	BUG-2975	Plasma Cable Mounting Assembly



Model 80 Jumbo Machine Cutting Torch

Harris 80 "Jumbo" machine cutting torch has a recommended cutting range of 8" to 30". It operates on a fuel pressure of 10-15 PSIG using oxy-propane/propylene based fuels or oxy-natural gas.

- ▶ Solid head for maximum strength
- ▶ Standard 1 3/8" diameter barrel
- ▶ A 1/2" I.D. hose with Class "C" connections (7/8-14") is required for the cutting oxygen.

Special Order Only

PART NO.	MODEL NO.	STYLE	BARREL
1100010	80	3 HOSE	20"
1100030	80-R*	3 HOSE & RACK	20"

*Rack supplied is 32 pitch (10.12 teeth/in.) unless 24 pitch (7.65 teeth/in.) is specified.

*Number in () indicates quantity if more than one in standard package.



See Page 29 For Available Tip.

Model 98-6 Machine Torch

Harris machine cutting torches are designed to handle all types of machine cutting applications. Rugged and dependable, these torches provide up to 15" cutting capacity. The 98-6 series torches are available in two-hose and three hose design for all fuel gases at pressures as low as 4oz.

- ▶ Solid head for maximum strength
- ▶ Standard 1 3/8" diameter barrel
- ▶ Use with 6290 High Speed Machine Cutting Tips
- ▶ Equipped with Flash Guard® check valves
- ▶ Rack supplied is 32 pitch (10.12 teeth/in.)



Positive Pressure "E" Type Torches for Acetylene and Alternate Fuels

PART NO.	MODEL NO.	STYLE	BARREL	WEIGHT
1101425	98-6ER-32	2 HOSE & RACK	10"	3.3 lbs.
1101435	98-6TER-32	3 HOSE & RACK	10"	3.3 lbs.
1101445	98-6TAER-32	3 HOSE & RACK	18"	4.2 lbs.

Low Pressure "F" Injector Type Torches for Maximum Performance with Alternate Fuels**

PART NO.	MODEL NO.	STYLE	BARREL	WEIGHT
1101455	98-6FR-32	2 HOSE & RACK	10"	3.3 lbs.
1101465	98-6TFR-32	3 HOSE & RACK	10"	3.3 lbs.
1101475	98-6TAFR-32	3 HOSE & RACK	18"	4.2 lbs.
1100231	98-3TFR-32	3 HOSE & RACK	5 1/2"	2.2 lbs.

**Not for use with Acetylene

98-6 Three Hose Torches:

- ▶ Quick opening cutting oxygen valve for immediate full flow
- ▶ Separate preheat and cutting oxygen valves for high and low preheat control.
- ▶ Cutting capacity to 15"
- ▶ 98-6 Torches supplied with check valves on preheat oxygen and preheat fuel

98-6 Two Hose Torches:

- ▶ Cutting capacity to 8"
- ▶ 98-6 Torches supplied with check valves on preheat oxygen and preheat fuel

98-3 Torches:

- ▶ Three-hose valveless design for pipe beveling, multiple beveling and similar applications.
- ▶ Cutting capacity to 15"



Machine Cutting Accessories

Model BV-98-2 (P/N 1200124)

Beveling Head

Increases speed of quality bevel cuts. Preheat tip swivels for either left or right travel. Equipped with 1390-3H heating tip. Use with natural gas or propane 6290 tips (not included).



Model S-98-C (P/N 1200080)

Adjustable Tip Adapter

Adjust tip to any angle without moving the torches. Use with any 6290 tips (not included).



Model TH-98 (P/N 1200090)

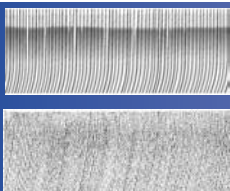
Adjustable Twin Tip Holder

For making two cuts simultaneously with one torch. Adjusts from 1 1/2" to 12" width. Use with any 6290 tips (not included).



Machine Cutting Guide

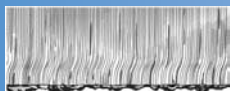
CORRECT CUTTING



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.

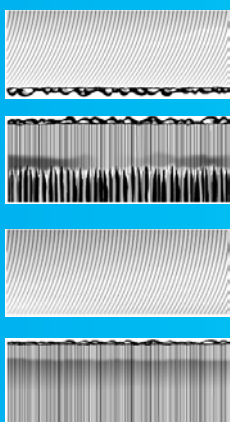
PRODUCTION CUT - Moderately sloping drag lines and a reasonably smooth surface characterize a production cut. For production operations a cut of this type represents the best combination of quality and economy.

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



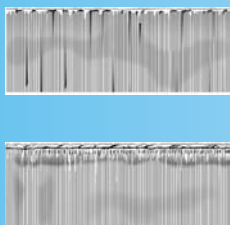
EXTREMELY FAST - Rake angle of drag lines shows extremely fast cutting speed. Top edge is good and cut face is smooth. However, slag adheres to the bottom side and there is danger of losing the cut. Not enough time is allowed for slag to blow out of the kerf. Cut face often slightly concave.

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.

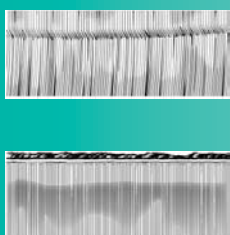
TIP DISTANCE



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 preheat effectiveness is partially lost due to the tip being held too high. Cutting speed is reduced because of the danger of losing the cut.

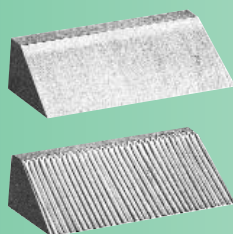
GAS ADJUSTMENT



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 preheat flame too mild. Another fault is a rounded top edge, caused by too much preheat indicating excessive gas consumption.

A Global Family of Gas Cutting & Flow Control Equipment

Regulator & Torch Safety Accessories

Harris Model 88-5 FBR Flash-Guard® Regulator & Torch Flashback Arrestors



- ▶ Prevents reverse flow of gases with built-in check valves
- ▶ Extinguishes flashback fire with stainless steel sintered element
- ▶ 9/16" - 18 outlets CGA "B" size outlets
- ▶ Flow Capacity - Models 88-5FBR (R&L) and 88-5FBR (R&L) arrestors should not be used with tip sizes larger than those noted below:
 - Hand Cutting Tips - #5 (except for NFF TIPS - #4)
 - Machine Cutting Tips - #5 1/2
 - Acetylene Heating Tips - #4
 - Alternate Fuel Heating Tips - #2
 - Cleaning Heads - #2 RBP (no limitation with RBA)
- ▶ 100 Micron inlet filter helps keep dust and dirt out



Torch Type
Model 88-5FBR (R&L)
(P/N 4301650)
Sold in pairs only



Regulator Type
Model 88-5FBR (R&L)
(P/N 4301651)
Sold in pairs only

Harris Model 88-5 FBHR Flash-Guard® High Flow Regulator Flashback Arrestors



High Flow Regulator Type
Model 88-5FBHR (R&L)
(P/N 4301652) - Oxygen
(P/N 4301655) - Fuel
Sold separately

- ▶ Same features as Model 88-5FBR (R&L) above plus a thermal shut-off which positively shuts off the gas in case of hose fire, burn back or repeated flashbacks.
- ▶ High flow capacity - can be used with all Harris tips

Harris Quick Connectors

- ▶ Long lasting stainless steel pin connection
- ▶ Automatic gas cut off feature to positively shut off the gas supply when disconnected
- ▶ Helps prevent theft by making it easier to take down and put-away equipment
- ▶ Durable brass and stainless steel construction
- ▶ 9/16"-18 ("B") connections



Regulator Type
Model 26-QCR (R&L)
(P/N 4301653)
Sold in pairs only



Torch Type
Model 26-QCT (R&L)
(P/N 4301654)
Sold in pairs only

Harris Flash-Guard® Check Valves



Check valves fully open with only ounces of pressure. If reverse flow starts, the valve closes immediately for total shutoff.

- ▶ High Capacity- adequate for cutting 15" steel and for operating the largest heating torches
- ▶ Quality Manufacture- valve spring made of stainless steel for long life
- ▶ 100% Production Tested- individually tested and packaged immediately to assure cleanliness
- ▶ 9/16"-18 connections
- ▶ Conforms to OSHA regulations

Torch Type
Model 88-6CVT (R&L)
Blister Pack Pair
(P/N 4300390)

88-6CVTR
(4300162)

88-6CVTL
(4300161)



Regulator Type
Model 88-6CVR (R&L)
Blister Pack Pair
(P/N 4300389)
Mounts on regulator outlet.

Regulator Type
Permanently mounts in the regulator replacing the outlet nipple.
(sold separately only)



88-6CVRL
(4300384)

88-6CVRR
(4300383)



88-7CVRL
(4300382)

88-7CVRR
(4300381)



COMPACT

Model 301 Single Stage Regulator

- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ 2" dual scale gauges
- ▶ Additional technical data on page 75



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000165	301-15-200MC	ACETYLENE	500	0-15	30	400	CGA 200MC	9/16"-18 LH
3000160	301-15-300		500	0-15	30	400	CGA 300	9/16"-18 LH
3000161	301-15-510		500	0-15	30	400	CGA 510	9/16"-18 LH
3000166	301-15-520B		500	0-15	30	400	CGA 520B	9/16"-18 LH
3000162	301-100-540	OXYGEN	3000	0-100	150	4000	CGA 540	9/16"-18 RH
3000187	301-100-580	Ar,N ₂ ,He	3000	0-100	150	4000	CGA 580	9/16"-18 RH
3000192	301-100-320	CO ₂	3000	0-100	150	4000	CGA 320	9/16"-18 RH

Model 25 Single Stage Regulator

- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Chrome-plated bonnet with Forged brass body
- ▶ 2" dual scale gauges
- ▶ Featured in the Steelworker Classic outfits
- ▶ Additional technical data on page 76

BEST VALUE

Gauge Guards



4300140
Fuel Gas

4300139
Oxygen



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000350	25-15C-300	ACETYLENE	500	0-15	30	400	CGA 300	9/16"-18 LH
3000380	25-15C-510	ACETYLENE	500	0-15	30	400	CGA 510	9/16"-18 LH
3000450	25-50C-510P	PROPANE*	500	0-50	60	400	CGA 510P	9/16"-18 LH
3000510	25-100C-540	OXYGEN	3000	0-100	150	4000	CGA 540	9/16"-18 RH
3000540	25-100C-580	Ar,N ₂ ,He	3000	0-100	150	4000	CGA 580	9/16"-18 RH ***
3000550	25-100C-590	IND. AIR	3000	0-100	150	4000	CGA 590	9/16"-18 RH
3000806	25-200C-580	N ₂	3000	0-200	400	4000	CGA 580	9/16"-18 RH ***
MODEL 25 HVAC REGULATOR								
3000606	25-500C-580	Ar,N ₂ ,He	3000	0-500	1000	4000	CGA 580	1/4 X 1/4 FLARE

*Regulator designated for propane service can be used with any of the other welding grade liquid petroleum gases. NOT FOR USE WITH ACETYLENE.

**For additional information on 25-500C see page 78.

*** 5/8"-18 adaptor included (P/N 9000002).

A Global Family of Gas Cutting & Flow Control Equipment



PREMIUM

Gauge Guards



4300140
Fuel Gas

4300139
Oxygen



USA
MADE IN

3YEAR
WARRANTY

Model 425 Single Stage Regulator

- ▶ Tamper proof, self reseating internal HP safety valve*
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Bronze adjusting screw for smooth adjusting
- ▶ Brass bonnet and body
- ▶ 2-1/2" dual scale gauges
- ▶ Conforms to CGA E-4
- ▶ Featured in the Pipeliner Classic outfits
- ▶ Additional technical data on page 76

PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000816	425-15-300	ACETYLENE	500	0-15	30	400	CGA 300	9/16"-18 LH
3000815	425-15-510		500	0-15	30	400	CGA 510	9/16"-18 LH
3000762	425-125-346	MEDICAL AIR	3000	0-125	200	4000	CGA 346	9/16"-18 RH
3000764	425-200-346	MEDICAL AIR	3000	0-200	400	4000	CGA 346	9/16"-18 RH
3000821	452-125-590	INDUSTRIAL AIR	3000	0-125	200	4000	CGA590	9/16"-18 RH
3000837	425-15-580		3000	0-15	30	4000	CGA 580	9/16"-18 RH
3000843	425-50-580	ARGON,	3000	0-50	50	4000	CGA 580	9/16"-18 RH
3000767	425-125-580	NITROGEN,	3000	0-125	200	4000	CGA 580	9/16"-18 RH
3000765	425-125A-580*	HELIUM	3000	0-125	200	4000	CGA 580	9/16"-18 RH
3000773	425-200-580		3000	0-200	400	4000	CGA 580	9/16"-18 RH
3000848	425-15-555	NITROGEN	3000	0-15	30	4000	CGA 555	9/16"-18 RH
3000775	425-125-320	CARBON DIOXIDE	3000	0-125	200	4000	CGA 320	9/16"-18 RH
3000784	425-50A-350*	HYDROGEN	3000	0-50	60	4000	CGA 350	9/16"-18 LH
3000794	425-125A-350*	HYDROGEN	3000	0-125	200	4000	CGA 350	9/16"-18 LH
3000787	425-125-350	ETHYLENE	3000	0-125	200	4000	CGA 350	9/16"-18 LH
3000795	425-50-540	OXYGEN	3000	0-50	60	4000	CGA 540	9/16"-18 RH
3000714	425-125-540	OXYGEN	3000	0-125	200	4000	CGA 540	9/16"-18 RH
3000796	425-200-540	OXYGEN	3000	0-200	400	4000	CGA 540	9/16"-18 RH
3000713	425-50-510P	PROPANE**	3000	0-50	60	400	CGA 510P	9/16"-18 LH

* Models with anti-vibrator "A" for He and H2 applications feature the standard Harris internal safety.

** Regulators designed for propane service can be used with any of the other welding grade liquid petroleum gases. NOT FOR USE WITH ACETYLENE.



**STAINLESS
STEEL
DIAPHRAGM**



USA
MADE IN

3YEAR
WARRANTY

Model 2500 Single Stage Regulator

- ▶ Stainless steel diaphragm
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Tamper proof, self reseating internal HP safety valve
- ▶ Brass bonnet and bronze adjusting screw
- ▶ 2-1/2" dual scale gauges
- ▶ Conforms to CGA E-4
- ▶ Additional technical data on page 75

PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3002508	2500-15-300	ACETYLENE	500	0-15	30	400	CGA 300	9/16"-18 LH
3002500	2500-15-510		500	0-15	30	400	CGA 510	9/16"-18 LH
3002502	2500-50-510P	PROPANE*	500	0-50	100	400	CGA 510P	9/16"-18 LH
3002511	2500-50-540		3000	0-50	100	4000	CGA 540	9/16"-18 LH
3002504	2500-125-540	OXYGEN	3000	0-125	200	4000	CGA 540	9/16"-18 LH
3002519	2500-125-580	Ar, H2, N2	3000	0-125	200	4000	CGA 580	5/8"-18 RH

* Regulator designed for propane service can be used with any of the other welding grade liquid petroleum gases. NOT FOR USE WITH ACETYLENE.

Model 3500 Single Stage High Flow Manifold Regulator

- ▶ Operates on high pressure cylinders of up to 5500 PSIG
- ▶ 2-3/4" neoprene diaphragm
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Tamper proof, self seating internal H.P. safety valve
- ▶ Brass bonnet and body
- ▶ Optional high capacity 3/8" NPT outlet 180o - 400 and 600 PSIG models have 3/8" outlet as standard
- ▶ 2-1/2" dual scale gauges
- ▶ Conforms to CGA E-4
- ▶ 1/4" NPT Plug P/N: 9000306 3/8" NPT Plug P/N: 9000373
- ▶ Additional technical data on page 77



USA
MADE IN

3 YEAR
WARRANTY

PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3003504	3500-15-510	ACETYLENE	500	0-15	30	400	CGA 510	9/16"-18 LH
3003505	3500-15-300		500	0-15	30	400	CGA 300	9/16"-18 LH
3003514	3500-50-510P*	PROPANE	500	0-50	100	400	CGA 510P	9/16"-18 LH
3003500	3500-125-540	OXYGEN	3000	0-125	200	4000	CGA 540	9/16"-18 RH
3003510	3500-200-540		3000	0-200	400	4000	CGA 540	9/16"-18 RH
3003501	3500-125-580		3000	0-125	200	4000	CGA 580	5/8"-18 RH(F)
3003507	3500-125-680		5500	0-125	200	6000	CGA 680	5/8"-18 RH(F)
3003511	3500-200-580	Ar, N2, He	3000	0-200	400	4000	CGA 580	5/8"-18 RH(F)
3003516	3500-200-680		5500	0-200	400	6000	CGA 680	5/8"-18 RH(F)
3003540	3500-400-580		3000	0-400	600	4000	CGA 580	3/8"-18 NPT(M)
3003541	3500-600-580		3000	0-600	1000	4000	CGA 580	3/8"-18 NPT(M)
3003502	3500-125-346	AIR	3000	0-125	200	4000	CGA 346	9/16"-18 RH
3003508	3500-125-347		5500	0-125	200	6000	CGA 347	9/16"-18 RH
3003512	3500-200-346		3000	0-200	400	4000	CGA 346	9/16"-18 RH
3003517	3500-200-347		5500	0-200	400	6000	CGA 347	9/16"-18 RH
3003503	3500-125-350	H2, METHANE	3000	0-125	200	4000	CGA 350	9/16"-18 LH
3003509	3500-125-695		5500	0-125	200	6000	CGA 695	9/16"-18 LH
3003513	3500-200-350		3000	0-200	400	4000	CGA 350	9/16"-18 LH
3003518	3500-200-695		5500	0-200	400	6000	CGA 695	9/16"-18 LH



*Regulators for propane service can be used with any of the other welding grade liquid petroleum gases. NOT FOR USE WITH ACETYLENE.

MOTORSPORTS REGULATORS - Chrome Plated

3003538	3500-400-580	Ar, NITROGEN, He	3000	0-400	600	4000	CGA 580	3/8" NPT(M)
3003539	3500-600-580		3000	0-600	1000	4000	CGA 580	3/8" NPT(M)

MODEL 3510 MANIFOLD REGULATOR



- ▶ All brass construction
- ▶ High flow - 1/4" encapsulated seat
- ▶ Neoprene diaphragm
- ▶ Internal relief valve
- ▶ Cv = .55
- ▶ 1.00-11.5 NPS inlet/outlet fittings
- ▶ CGA 996-RH; 997-LH
- ▶ 3/8" Body Ports

3510 ORDERING INFORMATION

Model 3510 - 125 RH 3003549
 Model 3510 - 200 RH 3003550
 Model 3510 - 15 RH 3003546*
 Model 3510 - 125 LH 3003548
 Model 3510 - 200 LH 3003551
 Model 3510 - 15 (Acetylene) 3003547*

* Not for high pressure cylinder gases

Model 8700 High Pressure Regulator



The Model 8700 high pressure regulator is designed to operate on high pressure cylinders up to 7500 PSIG. All inert gas and air models are self-relieving. Typical applications include high pressure testing, charging accumulators and pressurizing aircraft struts.

- ▶ One piece encapsulated valve design with CTFE seats and an internal filter
- ▶ Elastomeric diaphragm for longer life
- ▶ 1/4" NPT Stainless Steel Swagelok® outlet
- ▶ 2-1/2" dual scale gauges (PSI/Bar)
- ▶ Conforms to CGA E-4
- ▶ Model 8700 Panel Mount Kit P/N: 9100887
- ▶ Additional technical data on page 78

USA
MADE IN **3 YEAR**
WARRANTY

PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3200300	8700-1500-580	N2, Ar, He	3000	0-1500	3000	4000	CGA 580	1/4" SS TUBE FITTING
3200301	8700-2500-580	N2, Ar, He	3000	0-2500	4000	4000	CGA 580	1/4" SS TUBE FITTING
3200302	8700-1500-350	H2/METHANE	3000	0-1500	3000	4000	CGA 350	1/4" SS TUBE FITTING
3200303	8700-2500-350	H2/METHANE	3000	0-2500	4000	4000	CGA 350	1/4" SS TUBE FITTING
3200304	8700-1500-590	INDUSTRIAL AIR	3000	0-1500	3000	4000	CGA 590	1/4" SS TUBE FITTING
3200305	8700-2500-590	INDUSTRIAL AIR	3000	0-2500	4000	4000	CGA 590	1/4" SS TUBE FITTING
3200306	8700-1500-540	OXYGEN	3000	0-1500	3000	4000	CGA 540	1/4" SS TUBE FITTING
3200307	8700-2500-540		3000	0-2500	4000	4000	CGA 540	1/4" SS TUBE FITTING
3200308	8700-1500-540SG		3000	0-1500	3000	4000	CGA 540	1/4" SS TUBE FITTING
3200309	8700-2500-540SG		3000	0-2500	4000	4000	CGA 540	1/4" SS TUBE FITTING
3200310	8700-1500-346	MEDICAL AIR	3000	0-1500	3000	4000	CGA 346	1/4" SS TUBE FITTING
3200311	8700-2500-346		3000	0-2500	3000	4000	CGA 346	1/4" SS TUBE FITTING
3200312	8700-1500-347		5500	0-1500	3000	6000	CGA 347	1/4" SS TUBE FITTING
3200314	8700-3000-347		5500	0-3000	4000	6000	CGA 347	1/4" SS TUBE FITTING
3200315	8700-4500-347		5500	0-4500	6000	6000	CGA 347	1/4" SS TUBE FITTING
3200316	8700-1500-695	H2 METHANE	5500	0-1500	3000	6000	CGA 695	1/4" SS TUBE FITTING
3200318	8700-3000-695		5500	0-3000	4000	6000	CGA 695	1/4" SS TUBE FITTING
3200319	8700-4500-695		5500	0-4500	6000	6000	CGA 695	1/4" SS TUBE FITTING
3200320	8700-1500-677	N2, Ar, He	7500	0-1500	3000	10000	CGA 677	1/4" SS TUBE FITTING
3200321	8700-3000-677		7500	0-3000	4000	10000	CGA 677	1/4" SS TUBE FITTING
3200322	8700-4500-677		7500	0-4500	6000	10000	CGA 677	1/4" SS TUBE FITTING
3200323	8700-6000-677		7500	0-6000	10000	10000	CGA 677	1/4" SS TUBE FITTING
3200324	8700-1500-680	N2, Ar, He	5500	0-1500	3000	6000	CGA 680	1/4" SS TUBE FITTING
3200326	8700-3000-680		5500	0-3000	4000	6000	CGA 680	1/4" SS TUBE FITTING
3200327	8700-4500-680		5500	0-4500	6000	6000	CGA 680	1/4" SS TUBE FITTING

Model 330 Liquid Cylinder Regulator

The Model 330 regulator allows for gaseous withdrawal from oxygen, carbon dioxide, argon and nitrogen liquid cylinders.

- ▶ 2-3/4" stainless steel diaphragm
- ▶ PTFE teflon seals
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Tamper proof, self seating internal H.P. safety valve
- ▶ Forged brass body and bonnet
- ▶ Designed specifically to operate on liquid cylinders but can be used on high pressure cylinders without damage
- ▶ 2-1/2 dual scale gauges
- ▶ Conforms to CGA E-4
- ▶ Additional technical data on page 79

USA
MADE IN 3 YEAR
WARRANTY



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3001092	330-125-320	CARBON DIOXIDE	3000	0-125	200	CGA 320	9/16"-18
3001095	330-350-320		3000	0-350	500	CGA 320	9/16"-18
3001099	330-500-320		3000	0-500	600	CGA 320	1/4"-NPT
3001090	330-125-540	OXYGEN	3000	0-125	200	CGA 540	9/16"-18
3001093	330-350-540		3000	0-350	500	CGA 540	9/16"-18
3001097	330-500-540		3000	0-500	600	CGA 540	1/4"-NPT
3001091	330-125-580	ARGON/NITROGEN	3000	0-125	200	CGA 580	9/16"-18
3001094	330-350-580		3000	0-350	500	CGA 580	9/16"-18
3001098	330-500-580		3000	0-500	600	CGA 580	1/4"-NPT

Model 29 Single Stage Gaugeless Regulator

Gaugeless regulators are specifically designed for use in installations where rough handling and abuse of gas apparatus is commonplace. The color coded cylinder contents indicator and the delivery pressure calibration on the bonnet are easily read.

- ▶ 2-3/4" diaphragm
- ▶ Additional technical data on page 76



Delivery pressure calibration on regulator bonnet



Color coded cylinder contents indicator

UL USA
MADE IN 3 YEAR
WARRANTY

GAUGELESS



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3600260	29-15C-510	ACETYLENE	500	0-15	CGA 510	9/16"-18 LH
3600250	29-15C-300		500	0-15	CGA 300	9/16"-18 LH
3600340	29-100C-540	OXYGEN	3000	0-100	CGA 540	9/16"-18 RH
3600200	29-100C-540SG		3000	0-100	CGA 540SG	9/16"-18 RH
3600320	29-50C-510P	PROPANE*	500	0-50	CGA 510P	9/16"-18 LH
3600345	29-100C-580	He/Ar/NITROGEN	3000	0-100	CGA 580	9/16"-18 RH

* Regulator designed for propane service can be used with any of the other welding grade liquid petroleum gases. NOT FOR USE WITH ACETYLENE.



BACK ENTRY

**Model 447
Back Entry
"C" Connection Shown**

Model 447 High Flow Station and Pipeline Regulators

The Model 447 regulators provide high gas flows from gas distribution systems.

- ▶ 2-3/4" neoprene diaphragm
- ▶ One-piece encapsulated seat design with an internal filter and PTFE teflon seats
- ▶ Forged brass body and bonnet
- ▶ 2-1/2" dual scale brass gauge
- ▶ Conforms to CGA E-4
- ▶ Low pressure models use a neoprene seat (NC)*
- ▶ 447-20p-1/4 for pipeline flowmeter regulator service
- ▶ Additional technical data on page 79

**USA
MADE IN** **3 YEAR
WARRANTY**

PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
STATION REGULATORS							
4000548*	447NC-1-CL	FUEL GASES	200	0-1	15	7/8"-14-LH(F)	9/16"-18 LH
4000549*	447NC-15CL		200	0-15	30	7/8"-14-LH(F)	9/16"-18 LH
4000551	447-50-CL		200	0-50	100	7/8"-14-LH(F)	9/16"-18 LH
4000566*	447NC-15-CR	OXYGEN	200	0-15	30	7/8"-14-RH(F)	9/16"-18 RH
4000553	447-50-CR		200	0-50	100	7/8"-14-RH(F)	9/16"-18 RH
4000555	447-125-CR		200	0-125	200	7/8"-14-RH(F)	9/16"-18 RH
4000557	447-200-CR	AIR/INERT GAS "OIL FREE"	200	0-200	400	7/8"-14-RH(F)	9/16"-18 RH
4000559	447-50-CRM		200	0-50	100	7/8"-14-RH(M)	5/8"-18 RH(F)
4000561	447-125-CRM		200	0-125	200	7/8"-14-RH(M)	5/8"-18 RH(F)
4000563	447-200-CRM		200	0-200	400	7/8"-14-RH(M)	5/8"-18 RH(F)

PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
PIPELINE REGULATORS							
4000565	447-FG-1/4	Ar, CO2	400	0-100 SCFH	0-100 SCFH	1/4 NPT(F)	5/8"-18 RH(F)
4000568*	447NC-1-1/4"L	FUEL GASES	400	0-1	15	1/4 NPT(F)	9/16"-18 LH
4000569*	447NC-15-1/4"L		400	0-15	30	1/4 NPT(F)	9/16"-18 LH
4000571	447-50-1/4"L		400	0-50	100	1/4 NPT(F)	9/16"-18 LH
4000579*	447NC-15-1/4"R	OXYGEN	400	0-15	30	1/4 NPT(F)	9/16"-18 RH
4000573	447-50-1/4"R		400	0-50	100	1/4 NPT(F)	9/16"-18 RH
4000575	447-125-1/4"R		400	0-125	200	1/4 NPT(F)	9/16"-18 RH
4000577	447-200-1/4"R	AIR/INERT GAS "OIL FREE"	400	0-200	400	1/4 NPT(F)	9/16"-18 RH
4000588*	447NC-1-1/4"RF		400	0-1	15	1/4 NPT(F)	5/8"-18 RH(F)
4000580	447-50-1/4"RF		400	0-50	100	1/4 NPT(F)	5/8"-18 RH(F)
4000582	447-125-1/4"RF		400	0-125	200	1/4 NPT(F)	5/8"-18 RH(F)
4000584	447-20p-1/4"R		400	20 Preset	(no gauge)	1/4 NPT(F)	9/16"-18 RH(M)

NOTE: Station Regulator CGA Connections - Fuel Gas: 025, Oxygen: 024, Inert Gases: 034.

NOTE: The maximum inlet pressure for a station regulator is 200 PSIG. The maximum inlet pressure for a Model 447 station regulator with the "C" connection removed is 400 PSIG.

Model 547 High Flow Station Regulators

SIDE ENTRY

The Model 547 provides high gas flows from gas distribution systems.

- ▶ One-piece encapsulated seat design with an internal filter and PTFE teflon seats
- ▶ Forged brass body and bonnet
- ▶ 2-3/4" neoprene diaphragm
- ▶ 2-1/2" dual scale brass gauge
- ▶ Conforms to CGA E-4
- ▶ Low pressure models use a Neoprene seat (NC)*
- ▶ Additional technical data on page 79

USA
MADE IN 3 YEAR
WARRANTY



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	CGA INLET CONNECTION	OUTLET CONNECTION
4000601*	547NC-15-CL	FUEL GASES	200	0-15	30	7/8"-14-LH(F) 025	9/16"-18 LH
4000603	547-50-CL		200	0-50	100	7/8"-14-LH(F) 025	9/16"-18 LH
4000605	547-50-CR		200	0-50	200	7/8"-14-RH(F) 024	9/16"-18 RH
4000607	547-125-CR	OXYGEN	200	0-125	200	7/8"-14-RH(F) 024	9/16"-18 RH
4000609	547-200-CR		200	0-200	400	7/8"-14-RH(F) 024	9/16"-18 RH
4000620*	547NC-1-CRM		200	0-1	15	7/8"-14-RH(M) 034	5/8"-18 RH(F)
4000611	547-50-CRM	AIR/INERT GAS	200	0-50	100	7/8"-14-RH(M) 034	5/8"-18 RH(F)
4000613	547-125-CRM	"OIL FREE"	200	0-125	200	7/8"-14-RH(M) 034	5/8"-18 RH(F)
4000615	547-200-CRM		200	0-200	400	7/8"-14-RH(M) 034	5/8"-18 RH(F)
4000617	547-FG-1/4	Ar, CO2	500	0-100 SCFH	0-100 SCFH	1/4 NPT(F) 034	9/16"-18 RH

NOTE: The maximum inlet pressure for a station regulator is 200 PSIG. The maximum inlet pressure for a Model 547 station regulator with the "C" connection removed is 500 PSIG

* 547-FG is a Pipeline Regulator

Model 2548 High Flow Pipeline Regulator

STAINLESS
STEEL
DIAPHRAGM

Ideal for general purpose specialty gas applications with high pressure pipeline pressures up to 3000 PSIG.

- ▶ 2-3/4" stainless steel diaphragm
- ▶ One-piece encapsulated seat design with an internal filter and PTFE teflon seat
- ▶ Forged brass body and bonnet
- ▶ Models available to operate on inlet pressures of up to 3000 PSIG
- ▶ Tamper-proof, self reseating internal H.P. safety valve on selected models
- ▶ Converts to either right hand or left hand operation
- ▶ 2-1/2" dual scale brass gauge
- ▶ Conforms to CGA E-4
- ▶ Additional technical data on page 80

USA
MADE IN 3 YEAR
WARRANTY



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	INTERNAL RELIEF VALVE	INLET CONNECTION	OUTLET CONNECTION
4000701	2548-15-1/4		500	0-15	30	NO	CGA 1/4" NPT(F)	1/4" NPT(F)
4000702	2548-50-1/4	FUEL GASES	500	0-50	100	NO	CGA 1/4" NPT(F)	1/4" NPT(F)
4000705	2548-125-1/4		500	0-125	200	NO	CGA 1/4" NPT(F)	1/4" NPT(F)
4000708	2548-200-1/4		500	0-200	400	NO	CGA 1/4" NPT(F)	1/4" NPT(F)
4000704	2548-50-1/4	OXYGEN	3000	0-50	100	YES	CGA 1/4" NPT(F)	1/4" NPT(F)
4000707	2548-125-1/4		3000	0-125	200	YES	CGA 1/4" NPT(F)	1/4" NPT(F)
4000710	2548-200-1/4		3000	0-200	400	YES	CGA 1/4" NPT(F)	1/4" NPT(F)
4000703	2548-50-1/4	AIR/INERT GAS	3000	0-50	100	YES	CGA 1/4" NPT(F)	1/4" NPT(F)
4000706	2548-125-1/4	"OIL FREE"	3000	0-125	200	YES	CGA 1/4" NPT(F)	1/4" NPT(F)
4000709	2548-200-1/4		3000	0-200	400	YES	CGA 1/4" NPT(F)	1/4" NPT(F)

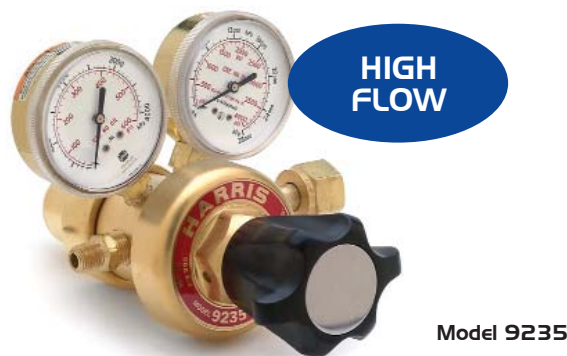
A Global Family of Gas Cutting & Flow Control Equipment

Model 9200, 9235 Two Stage Regulators

Multi-Stage regulator designed for applications where a constant delivery pressure is required over a wide range of inlet pressure. The Model 9200 is the standard for general purpose, laboratory, industrial and welding applications. The Model 9235 is designed for high flow applications.

- ▶ 2-3/4" neoprene diaphragm
- ▶ One-piece encapsulated seat design with an internal filter and PTFE teflon seats
- ▶ Self-seating internal H.P. safety valve
- ▶ Brass body and bonnets
- ▶ 2-1/2" dual scale gauge
- ▶ Low pressure models use a neoprene seat (NC)*
- ▶ Conforms to CGA E-4
- ▶ Model 9235 features a 3/8" NPT outlet port 180° from the inlet
- ▶ Additional technical data on page 81,82

USA
MADE IN **3YEAR**
WARRANTY



PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
MODEL 9200 MULTI-STAGE REGULATOR								
3302210*	9200NC-15-300	ACETYLENE	500	0-15	30	400	CGA 300	9/16"-18 LH
3302211*	9200NC-15-510	LPG FUEL GASES	500	0-15	30	400	CGA 510	9/16"-18 LH
3302212	9200-50-510P	PROPANE	500	0-50	100	400	CGA 510P	9/16"-18 LH
3302213	9200-50-540		3000	0-50	100	4000	CGA 540	9/16"-18 RH
3302214	9200-125-540	OXYGEN	3000	0-125	200	4000	CGA 540	9/16"-18 RH
3302284*	9200NC-5-580		3000	0-5	15	4000	CGA 580	9/16"-18 RH(F)
3302216*	9200NC-15-580		3000	0-15	30	4000	CGA 580	9/16"-18 RH(F)
3302217	9200-50-580	Ar, He, N2	3000	0-50	100	4000	CGA 580	9/16"-18 RH(F)
3302218	9200-125-580		3000	0-125	200	4000	CGA 580	9/16"-18 RH(F)
3302219	9200-250-580		3000	0-250	400	4000	CGA 580	9/16"-18 RH(F)
3302276	9200-15-320		3000	0-15	30	4000	CGA 320	9/16"-18 RH(F)
3302273	9200-50-320	CARBON DIOXIDE	3000	0-50	100	4000	CGA 320	9/16"-18 RH(F)
3302274	9200-125-320		3000	0-125	200	4000	CGA 320	9/16"-18 RH(F)
3302275	9200-250-320		3000	0-250	400	4000	CGA 320	9/16"-18 RH(F)
3302220*	9200NC-15-350		3000	0-15	30	4000	CGA 350	9/16"-18 LH
3302221	9200-50-350	H2, METHANE	3000	0-50	100	4000	CGA 350	9/16"-18 LH
3302222	9200-125-350		3000	0-125	200	4000	CGA 350	9/16"-18 LH
3302223	9200-250-350		3000	0-250	400	4000	CGA 350	9/16"-18 LH
3302224	9200-50-346		3000	0-50	100	4000	CGA 346	9/16"-18 RH
3302225	9200-125-346	AIR	3000	0-125	200	4000	CGA 346	9/16"-18 RH
3302226	9200-250-346		3000	0-250	400	4000	CGA 346	9/16"-18 RH
3302227	9200-50-590		3000	0-50	100	4000	CGA 590	9/16"-18 RH
3302228	9200-125-590	INDUSTRIAL AIR	3000	0-125	200	4000	CGA 590	9/16"-18 RH
3302229	9200-250-590		3000	0-250	400	4000	CGA 590	9/16"-18 RH
MODEL 9235 MULTI-STAGE HIGH FLOW MANIFOLD REGULATOR								
3302300	9235-350-350	H2, METHANE	3000	0-350	600	4000	CGA 350	1/4" NPT(M)
3302301	9235-350-540	OXYGEN	3000	0-350	600	4000	CGA 540	1/4" NPT(M)
3302302	9235-350-580	Ar, He, N2	3000	0-350	600	4000	CGA 580	1/4" NPT(M)

Model 9296, 9296SS Two Stage Regulators

REGULATORS



The Model 9296 Multi-Stage regulator is designed for applications where a constant delivery pressure is required over a wide range of inlet pressures. The Model 9296, a standard for general purpose laboratory, industrial and welding applications where neoprene diaphragms are acceptable. The Model 9296SS with stainless steel diaphragms is recommended for applications where outgassing and permeation is a concern.

- ▶ Available with stainless steel or neoprene diaphragms
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Self reseating internal H.P. safety valve
- ▶ Brass body
- ▶ 2" dual scale gauge
- ▶ Conforms to CGA E-4
- ▶ Low pressure models use a neoprene seat (NC)*
- ▶ Additional technical data on page 83,84

USA
MADE IN

3 YEAR
WARRANTY

9296 PART NO.	9296SS PART NO.	MODEL NO.	GAS	MAXIMUM INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3302600*	-	9296NC-15-300	Acetylene	500	0-15	30	400	CGA 300	9/16"-18 LH
3302601*	3302681	9296NC-15-510	Acet./Fuel Gas	500	0-15	30	400	CGA 510	9/16"-18 LH
3302602	-	9296-50-510P	Propane	500	0-50	60	400	CGA 510P	9/16"-18 LH
3302603	3302683	9296-50-540	Oxygen	3000	0-50	60	4000	CGA 540	9/16"-18 RH
3302604	3302684	9296-125-540		3000	0-125	150	4000	CGA 540	9/16"-18 RH
3302605	3302685	9296-250-540		3000	0-250	400	4000	CGA 540	1/4" NPT(F)
3302606*	3302686	9296NC-15-580	Ar, He, N2	3000	0-15	30	4000	CGA 580	5/8"-18 RH(F)
3302607	3302687	9296-50-580		3000	0-50	60	4000	CGA 580	5/8"-18 RH(F)
3302608	3302688	9296-125-580		3000	0-125	150	4000	CGA 580	5/8"-18 RH(F)
3302609	3302689	9296-250-580		3000	0-250	400	4000	CGA 580	1/4" NPT(F)
3302669	-	929615-320	Carbon Dioxide	3000	0-15	30	4000	CGA 320	5/8"-18 RH(F)
3302614	3302690	9296-50-320		3000	0-50	60	4000	CGA 320	5/8"-18 RH(F)
3302615	3302691	9296-125-320		3000	0-125	150	4000	CGA 320	5/8"-18 RH(F)
3302616	3302692	9296-250-320		3000	0-250	400	4000	CGA 320	1/4" NPT(F)
3302610*	3302693	9296NC-15-350	H2, Methane	3000	0-15	30	4000	CGA 350	9/16"-18 LH
3302611	3302694	9296-50-350		3000	0-50	60	4000	CGA 350	9/16"-18 LH
3302612	3302695	9296-125-350		3000	0-125	150	4000	CGA 350	9/16"-18 LH
3302613	3302696	9296-250-350		3000	0-250	400	4000	CGA 350	1/4"-NPT(F)
-	3302697	9296SS-50-590	Industrial Air	3000	0-50	60	4000	CGA 590	5/8"-18 RH(F)
-	3302698	9296SS-125-590		3000	0-125	150	4000	CGA 590	5/8"-18 RH(F)
-	3302699	9296SS-250-590		3000	0-250	400	4000	CGA 590	1/4"-NPT(F)
-	3302701	9296SS-50-346	Medical Air	3000	0-50	60	4000	CGA 346	5/8"-18 RH(F)
-	3302702	9296SS-125-346		3000	0-125	150	4000	CGA 346	5/8"-18 RH(F)
-	3302703	9296SS-250-346		3000	0-250	400	4000	CGA 346	1/4"-NPT(F)

A Global Family of Gas Cutting & Flow Control Equipment

Model 301. 425 & 330 Flowgauge Regulators

- ▶ For accurate measurement of gas flow to 100 SCFH
- ▶ Lightweight, rugged designs
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat



301-AR/CD

425 AR/CD

PART NO.	MODEL NO.	GAS	FLOW CAPACITY SCFH	DELIVERY GAUGE SCFH	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000232	301-AR30-580	Argon	5-30	5-30	4000	CGA 580	5/8"-18 RH(F)
3000163	301-AR60-580	Argon	0-60	60	4000	CGA 580	5/8"-18 RH(F)
3000244	301-AR60-680	Argon	0-60	60	6000	CGA 680	5/8"-18 RH(F)
3000164	301-CD60-320	Carbon Dioxide	0-60	60	4000	CGA 320	5/8"-18 RH(F)
3000774	425-AR100-580	Argon	0-100	100	4000	CGA 580	5/8"-18 RH(F)
3000776	425-CD100-320	Carbon Dioxide	0-100	100	4000	CGA 320	5/8"-18 RH(F)
3001096	330-CD100-320	Carbon Dioxide	0-100	100	-	CGA 320	5/8"-18 RH(F)
3001089	330-AR100-580	Argon	0-100	100	-	CGA 580	5/8"-18 RH(F)

Shielding Gas Kits

- ▶ Outfit available with Flowgauge or Flowmeter Regulator
- ▶ Flowgauge kit features Model 301, pg. 40
- ▶ Flowmeter regulator kit features Model 355, pg. 50
- ▶ Outfit includes 10 feet of 3/16" approved hose with inert gas fittings



Flowgauge (0-60 SCFH)



Flowmeter (0-70 SCFH)

PART NO.	MODEL NO.	GAS	FLOW CAPACITY SCFH	REGULATOR TYPE	ACCESSORIES
4400229	301AR-58010	Argon	0-60	FLOWGAUGE	3/16"X10' HOSE
4400231	301CD-32010	Carbon Dioxide	0-60	FLOWGAUGE	3/16"X10' HOSE
4400235	355-2AR-58010	Argon	0-70	FLOWMETER	3/16"X10' HOSE
4400234	355-2CD-32010	Carbon Dioxide	0-70	FLOWMETER	3/16"X10' HOSE



Model 55-2 Flowmeter

- ▶ Flows to 140 SCFH
- ▶ For accurate measurement of gas flow for gas shielded arc welding and laboratory applications
- ▶ Sensitive needle valve for fingertip control
- ▶ Tamper proof, self seating H.P. safety valve
- ▶ Durable, easy-to-read flow tube and cover

USA
MADE IN **3 YEAR**
WARRANTY



For pipeline applications, use the Harris Pre-set 447-20P-1/4R Regulator (P/N 4000584).
Inlet - 1/4" NPT Port
Outlet - 9/16"-18-RH (m)

PART NO.	MODEL NO.	GAS	FLOW CAPACITY SCFH	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
5400609	55-2 Ar/CD 70	Argon/Carbon Dioxide	0-70@20 PSIG*	4000	9/16"-18(F)	5/8"-18(F)
5400614	55-2 Ar/CD 70(M)	Argon/Carbon Dioxide	0-70@20 PSIG*	4000	5/8"-18(M)	5/8"-18(F)
5400610	55-2 Ar/CD 70-1/4	Argon/Carbon Dioxide	0-70@20 PSIG*	4000	1/4" NPT(M)	5/8"-18(F)
5400611	55-2 Ar/CD 100	Argon/Carbon Dioxide	0-100@50 PSIG*	4000	9/16"-18(F)	5/8"-18(F)
5400616	55-2 Ar/CD 100	Argon/Carbon Dioxide	0-100@50 PSIG*	4000	1/4" NPT(M)	5/8"-18(F)
5400612	55-2 He/H2 90	Helium/Hydrogen	0-100 (0-140)@20 PSIG	4000	9/16"-18(F)	5/8"-18(F)
5400613	55-2 N2/AIR 90	Nitrogen/Air	0-100@20 PSIG	4000	9/16"-18(F)	5/8"-18(F)
5400615	55-2 Ar/He	Argon/Helium	0-45 (0-140)@20 PSIG	4000	9/16"-18(F)	5/8"-18(F)

* On maximum continuous duty cycle, CO2 flow to 20 SCFH

Model 355-2 Flowmeter Regulator

- ▶ Regulator is pre-set at 20 PSIG
- ▶ Construction incorporates regulator and flowmeter into one compact unit
- ▶ Flow tube and float are easily changed for different gases
- ▶ Dual calibration on Argon/Carbon Dioxide flow tube
- ▶ Sensitive needle valve for fingertip control
- ▶ One-piece encapsulated seat design, with an internal filter and PTFE seat
- ▶ Durable, easy-to-read flow tube and cover
- ▶ Conforms to CGA E-4 Standard for Gas Pressure Regulators

UL **USA**
MADE IN **3 YEAR**
WARRANTY



PART NO.	MODEL NO.	GAS	FLOW CAPACITY SCFH	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3100200	355-2-Ar-580	Argon (CO2)	0-70	4000	CGA 580	5/8"-18(F)
3100201	355-2-CD-320	Carbon Dioxide (AR)	0-70*	4000	CGA 320	5/8"-18(F)
3100205	355-2-He-580	Helium (H2)	0-100 (0-140)	4000	CGA 580	5/8"-18(F)
3100207	355-2-N2/Air-580	Nitrogen (Air)	0-100	4000	CGA 580	5/8"-18(F)
3100204	355-2-AR/He-580	Argon (He)	0-45(0-140)	4000	CGA 580	5/8"-18(F)

* On maximum continuous duty cycle, CO2 flow to 20 SCFH



Model 4F Multi-Stage Flowmeter Regulator

- ▶ Designed specifically for CO₂ flow rates up to 100 SCFH on continuous duty cycle without freezing
- ▶ Regulator preset at 50 PSIG
- ▶ Multi-stage design spreads out the cooling effect of pressure reduction
- ▶ One-piece encapsulated seat design with an internal filter and a PTFE teflon seat
- ▶ Multi-finned black body design provides high rate of heat transfer into the regulator
- ▶ Sensitive needle valve permits highly accurate flow settings
- ▶ Durable easy-to-read flow tube and cover
- ▶ 1/4 NPT inlet stem



PART NO.	MODEL NO.	GAS	FLOW CAPACITY SCFH	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3100071	4-CD100F-320	Carbon Dioxide	0-100@50 PSIG	4000	CGA 320	5/8"-18 - F

Model 356 Single Stage Dual Flowmeter Regulator

- ▶ Model 301 Regulator with two Model 55 type Flowmeters
- ▶ Ideal for back purge TIG welding



Model 2555 High Pressure Cylinder Flowmeter Regulator

- ▶ Single Stage Regulator with a Model 55 type Flowmeter
- ▶ For use with 5500 PSIG cylinders



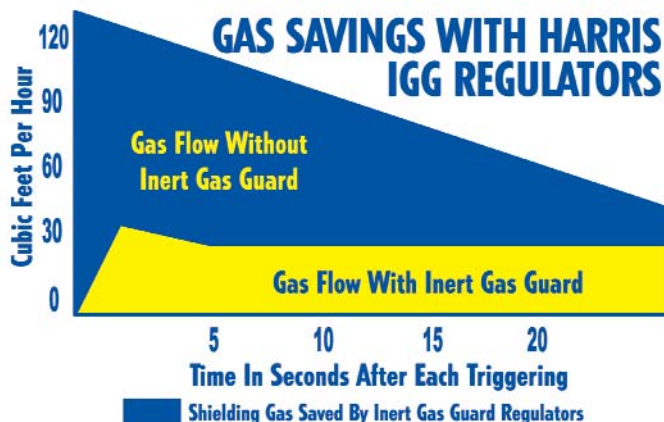
PART NO.	MODEL NO.	GAS	RATED FLOW CAPACITY SCFH	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3100140	356-Ar/He-580	Argon/Helium	0-45(0-140)@20 PSIG	4000	CGA 580	5/8" - 18(F)
3102555	2555-AR70-680	Argon/Helium	0-70 @20 PSIG	4000	CGA 680	5/8" - 18(F)

Inert Gas Guard Regulators

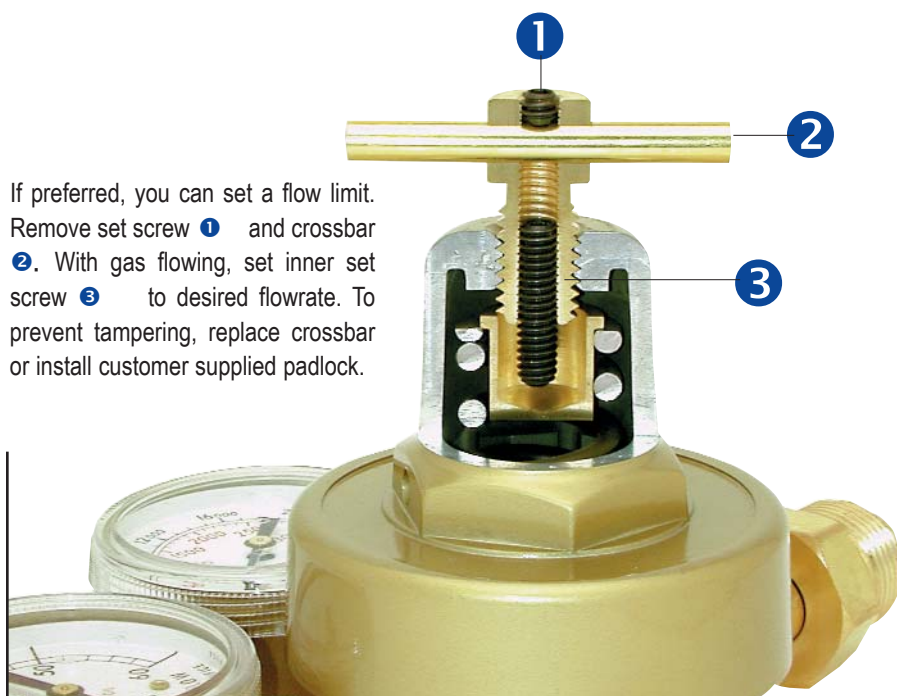
Harris Inert Gas Guard Regulators are designed to save shielding gases in two ways.

First, Inert Gas Guard Regulators reduce the gas surge when a MIG gun or TIG torch is activated. The gas surge is created by excess pressure trapped in the supply hose between the pressure control system and the valve or solenoid. Inert Gas Guard regulators lower the excess pressure on the supply hose and reduce the surge or gas waste when the gas system is activated.

Secondly, Inert Gas Guard Regulators deliver a more controlled flow rate. Operators tend to set shielding gas rates much higher than necessary for a welding operation. Inert Gas Guard Regulators can be set to deliver the precise amount of flow for the operation, eliminating this needless waste of shielding gas.



- ▶ Flows up to 80 SCFH
- ▶ Compact, rugged design.
- ▶ One piece, encapsulated seat design.
- ▶ Adjustable, fixed, fixed maximum or fixed locked flow rates.
- ▶ All Harris Inert Gas Guard Regulators are shipped with the T-Bar fully adjustable over the delivery range.



If preferred, you can set a flow limit. Remove set screw ① and crossbar ②. With gas flowing, set inner set screw ③ to desired flowrate. To prevent tampering, replace crossbar or install customer supplied padlock.

UL USA MADE IN 3 YEAR WARRANTY



Customer supplied padlock prevents tampering

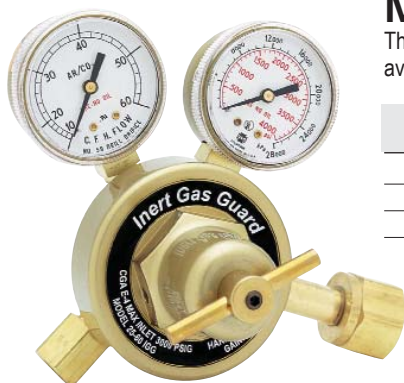
Inert Gas Guard Regulators



Model 447 Pipeline

The Model 447 Inert Gas Guard Regulators are designed for pipeline applications. Models available for MIG or TIG workstations.

PART NO.	MODEL NO.	MOUNTING STYLE	FLOW SETTINGS	INLET CONNECTION	OUTLET CONNECTION
4000547	447-40-IGG-1/4	Pipeline	0-40 SCFH	1/4"-FNPT	5/8"-18 R.H. Female
4000546	447-80-IGG-1/4	Pipeline	0-80 SCFH	1/4"-FNPT	5/8"-18 R.H. Female



Model 25 Cylinder

The Model 25 Inert Gas Guard Regulators are designed for cylinders. Available in 320 and 580 connections. Models available for MIG or TIG applications.

PART NO.	MODEL NO.	MOUNTING STYLE	FLOW SETTINGS	INLET CONNECTION	OUTLET CONNECTION
3000433	25-40-IGG-580	Cylinder	0-40 SCFH	CGA-580	5/8"-18 R.H. Female
3000432	25-60-IGG-320	Cylinder	0-60 SCFH	CGA-320	5/8"-18 R.H. Female
3000431	25-80-IGG-580	Cylinder	0-80 SCFH	CGA-580	5/8"-18 R.H. Female



Model 30I-80



Model 30I-80-IGGRF



Model 30I Flowmeter or Feeder Mount

The Model 30I-Inert Gas Guard Regulators are designed to connect to an existing flowmeter, flowmeter regulator or to a wire feeder. Available with or without a gauge.

PART NO.	MODEL NO.	MOUNTING STYLE	FLOW SETTINGS	INLET CONNECTION	OUTLET CONNECTION
3000326	30I-80-IGG-032 Without Gauge	Flowmeter	0-80 SCFH	5/8"-18 Male	5/8"-18 R.H. Female
3000328	30I-80-IGGRF-032 With Gauge	At Wire Feeder	0-80 SCFH	5/8"-18 Female	5/8"-18 R.H. Male
3000340	30I-80-IGGRFNG-032 Without Gauge	At Wire Feeder	0-80 SCFH	5/8"-18 Female	5/8"-18 R.H. Male

HP750 Servo Dome Loaded Regulator

SPECIALTY GAS



**USA
MADE IN**

The Model HP750 series regulator is a high pressure, high flow regulator system. The key to the performance of this regulator is the servo-dome load technology. The servo-dome load feature allows the regulator to supply high flow rates with straight line pressure regulation.

Applications Include: Laser assist gases, Pressure transfer, Blanketing & High flow manifolds

FEATURES

- ▶ 0-250, 500, or 1000 psi delivery pressure
- ▶ 3000 and 5500 psi inlet pressures
- ▶ Tamper proof, self-reseating internal safety valve on 250 & 500 models only
- ▶ One piece encapsulated seat design with 10-micron filtration
- ▶ Conforms to CGA E-4 Standard for Gas Pressure Regulators

MATERIALS

Body	Brass Barstock
Bonnets	Brass or Stainless Steel Barstock
Diaphragms	PTFE Teflon coated Neoprene
Seat Nozzles	Brass
Inlet Filters	Nickel-Plated Sintered Bronze
Adjusting Knob	Noryl Plastic
Inlet	1/2" FPT
Outlet	1/2" FPT

RELATED OPTIONS

Panel Mount Kit	P/N: 9100887
CGA 540 Adapter Kit*	P/N: 9005738
CGA 580 Adapter Kit	P/N: 9005749
CGA 680 Adapter Kit	P/N: 9005739

*Adaptor Kit - Allows for panel mount with pigtail inlet

HP 750 Ordering Information

PART NO.	MODEL NO.	MAX. INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG
3000860	HP750-500-3000	3000	0-500	600	4000
3000865	HP750-250-3000	3000	0-250	400	4000
3000866	HP750-1000-3000	3000	0-1000	2000	4000
3000867	HP750-500-5500	5500	0-500	600	6000
3000868	HP750-250-5500	5500	0-250	400	6000
3000869	HP750-1000-5500	5500	0-1000	2000	6000

A Global Family of Gas Cutting & Flow Control Equipment

USA
MADE IN

Specialty Gas single stage, two stage and line regulators for corrosive and non-corrosive gases.



Series 400
General Purpose Forged Brass



Series 720, 720C
High Purity Brass Barstock

SPECIALTY GAS



Series 700
High Purity Chrome-Plated Forged Brass



Series 740
High Purity Stainless Steel Barstock

A COMPLETE LINE OF SPECIALTY GAS ACCESSORIES

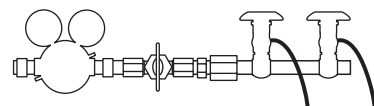


Please Visit Our Web Site or Call Customer Service For More Information - www.harriscalorific.com

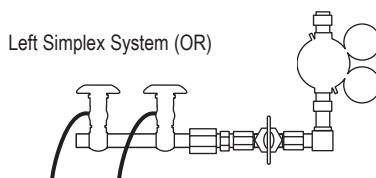
Series 200 Single Regulator Manifold

The Series 200 Single Regulator Manifold features the high flow Model 3510 regulator. The 1/2" brass headers are available in left and right configurations. The outlet regulator is ordered separately based on the required delivery pressure.

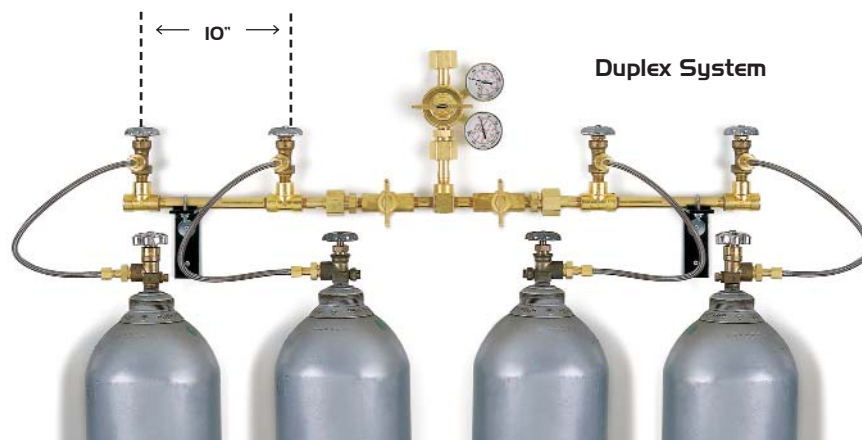
- ▶ Maximum inlet pressure 3000 PSIG
- ▶ Acetylene systems (CGA 510) include dry type flash arrestors on pigtail end
- ▶ All systems include SS Braided pigtails with PTFE lined inner core except those for Helium and Hydrogen which have a thermoplastic inner core.
- ▶ Available in Simplex style (order OR, OL, OR36, or OL36)



Right Simplex System (OL)



Left Simplex System (OR)



Duplex System

ORDERING INFORMATION

200	XX(XX)	XX(XX)	XXX
Series	Right Header (# cylinders)	Left Header (# cylinders)	Gas Service
200	24" Pigtails	24" Pigtails	320-Carbon Dioxide 346-Air 350H-Hydrogen 510A-Acetylene 540-Oxygen 580-N ₂ /Ar 590-Industrial Air 580H- Helium 510 - LPG Fuel Gas
	0R 1R 2R 3R 4R	0L 1L 2L 3L 4L	
	36" Pigtails	36" Pigtails	
	0R36 1R36 2R36 3R36 4R36	0L36 1L36 2L36 3L36 4L36	

Model 3510 Manifold Regulator

- ▶ All brass construction
- ▶ High flow - 1/4" encapsulated seat
- ▶ Neoprene diaphragm
- ▶ Internal relief valve
- ▶ Cv = .55
- ▶ 1.00-11.5 NPS inlet/outlet fittings
- ▶ 3/8" Body Ports



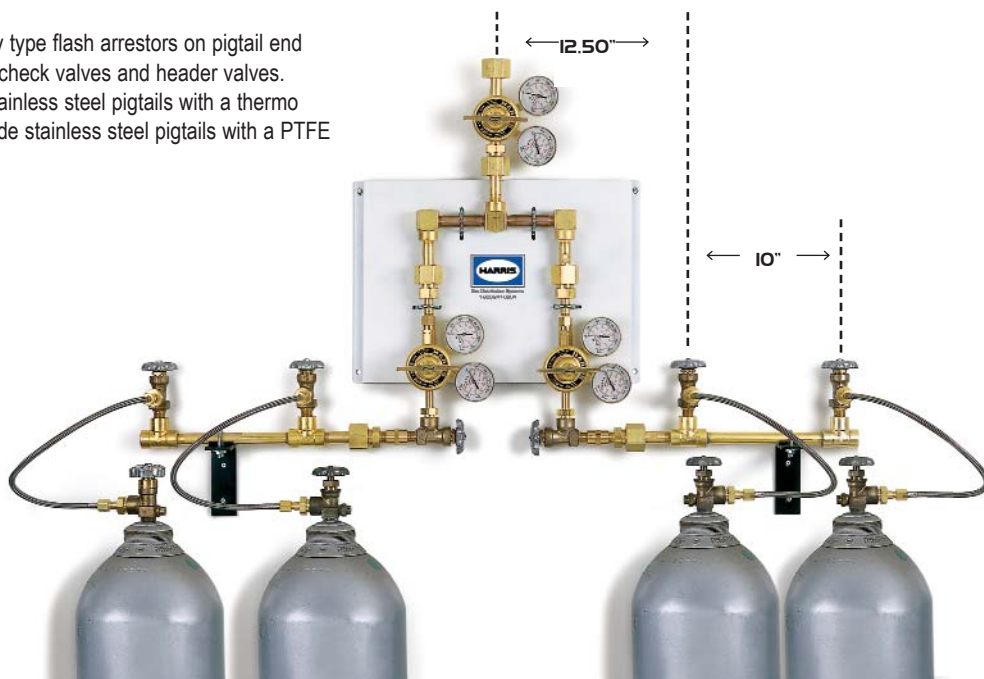
Description	Part Number
Model 3510 - 125 RH	3003549
Model 3510 - 200 RH	3003550
Model 3510 - 15 RH *	3003546
Model 3510 - 125 LH	3003548
Model 3510 - 200 LH	3003551
Model 3510 - 15 LH *	3003547

* Not for high pressure cylinder gases

Series 210 Pressure Differential Switchover

The Series 210 Manifold automatically switches gas supply from the primary cylinder bank to the reserve cylinder bank. Regulators must be manually reset to change the primary and reserve bank. The Series 210 Manifold features 1/2" brass construction with silver brazed connections. The Series 210 features the Model 3510 high flow brass regulator. The outlet regulator is ordered separately based on delivery pressure requirements.

- ▶ Master shut off valves included
- ▶ Maximum inlet pressure 3000 PSIG
- ▶ Acetylene systems (CGA 510) include dry type flash arrestors on pigtail end
- ▶ Headers include: Stainless steel pigtails, check valves and header valves.
Hydrogen and Helium systems include stainless steel pigtails with a thermo plastic inner core. All other systems include stainless steel pigtails with a PTFE lined inner core.



ORDERING INFORMATION

210	XX(XX)	XX(XX)	XXX
Series	Right Header (# cylinders)	Left Header (# cylinders)	Gas Service
210	24" Pigtails 1R 2R 3R 4R	24" Pigtails 1L 2L 3L 4L	320-Carbon Dioxide 346-Air 350H-Hydrogen 510A-Acetylene 540-Oxygen 580-N ₂ /Ar
	36" Pigtails 1R36 2R36 3R36 4R36	36" Pigtails 1L36 2L36 3L36 4L36	590-Air(Industrial) 580H-Helium 510-LPG Fuel Gas

Model 3510 Manifold Regulator

- ▶ All brass construction
- ▶ High flow - 1/4" encapsulated seat
- ▶ Neoprene diaphragm
- ▶ Internal relief valve
- ▶ Cv = .55
- ▶ 1.00-11.5 NPS inlet/outlet fittings
- ▶ 3/8" Body Ports



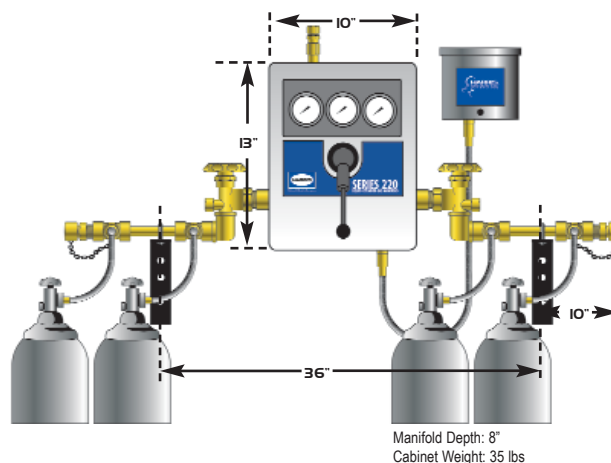
Description	Part Number
Model 3510 - 125 RH	3003549
Model 3510 - 200 RH	3003550
Model 3510 - 15 RH*	3003546
Model 3510 - 125 LH	3003548
Model 3510 - 200 LH	3003551
Model 3510 - 15 LH*	3003547

* Not for high pressure cylinder gases

Series 220 Pressure Differential Switchover

The Series 220 Manifold prevents downtime by automatically switching gas supply from the primary cylinder bank to the reserve cylinder bank. All components are enclosed and protected inside a tamper-resistant case. A green light indicates the primary cylinder bank is functioning and the reserve cylinder bank is ready for service. A red light alerts the user that the unit has changed over and one or both banks are depleted (except on fuel gas units). The user resets the primary bank by turning the lever.

**FOR HIGH
PRESSURE
CYLINDERS**



- ▶ Connects to remote alarm systems.
Up to 3 amps 30 volts (DC) or 2 amps 250 volts (AC)
Visual remote alarm is standard.
Audio/Visual alarm optional.
- ▶ Electrical - 115 volts (AC).
- ▶ Master shut off valves included.
- ▶ Maximum inlet pressure

220	3000 PSIG
220 (CO ₂ , N ₂ O)	2000 PSIG
200 (Acetylene, LPG)	400 PSIG
220HL (CO ₂ , N ₂ O)	2000 PSIG
220HP	3000 PSIG
220HP (CO ₂ , N ₂ O)	2000 PSIG
- ▶ Maximum flow rate

220	1200 SCFH
220 (Acetylene)	300 SCFH
220 (LPG)	400 SCFH
220 (CO ₂ , N ₂ O)	35 SCFH
220HL (CO ₂ , N ₂ O)	500 SCFH
220HP	2000 SCFH
- ▶ Internal adjustable line regulator:

220 and 220HL	30-125 PSIG
Acetylene	0-15 PSIG
LPG	0-30 PSIG
220 HP	50-200 PSIG

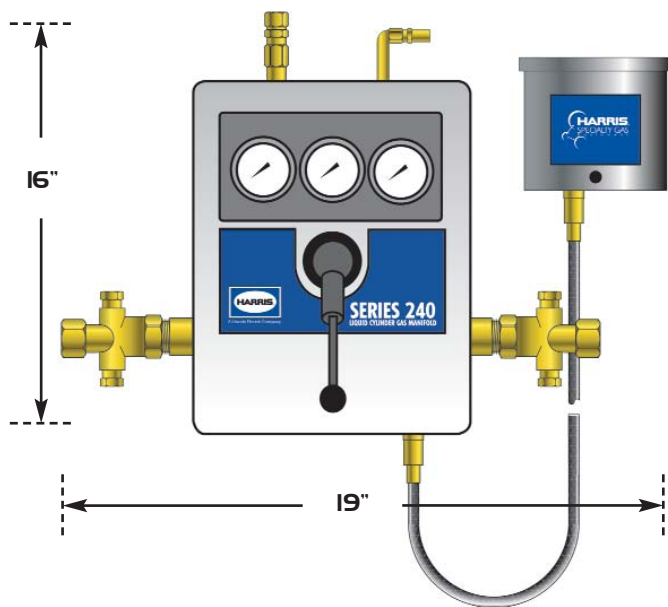
- ▶ Manifold outlet - 1/2" NPT.
- ▶ Relief valve outlet - 3/4" NPT.
- ▶ 1/2" brass, silver brazed headers.
- ▶ All systems include stainless steel braided pigtailed with PTFE lined inner core except Helium and Hydrogen systems which have a thermoplastic inner core.
- ▶ Acetylene systems include:
300 SCFH flashback arrestor and piping.
Stainless steel braided pigtailed with individual flashback arrestors and check valves.

ORDERING INFORMATION

220	XX(XX)	XX(XX)	XXX
Series	Right Header (# cylinders)	Left Header (# cylinders)	Gas Service
220 (30-125 PSIG) Acetylene (0-15 PSIG) LPG (0-30 PSIG)	24" Pigtailed 1R 2R 3R 4R	24" Pigtailed 1L 2L 3L 4L	320-Carbon Dioxide 326-Nitrous Oxide 346-Air 510A-Acetylene 510-Propane, LPG, Fuel Gases
220HL (30-125 PSIG) (For CO ₂ and N ₂ O, 500 SCFH heater included)	36" Pigtailed 1R36 2R36 3R36 4R36	36" Pigtailed 1L36 2L36 3L36 4L36	300-Acetylene 540-Oxygen 590-Air(Industrial) 580H-Helium 580-Argon/Nitrogen 350H-Hydrogen 350-Fuel Gases (Methane)
220HP (50-200 PSIG) Delivery Pressures up to 235 available upon request			

Series 240 Liquid Cylinder Gas Manifold

The Series 240 Manifold is designed specifically to regulate and monitor vaporized gas from cryogenic cylinders. The Series 240 Manifold prevents downtime by automatically switching over when the primary cylinder bank is depleted. A green light indicates the primary cylinder service bank is functioning and the reserve cylinder bank is ready for service. A red light signals that the system has changed over and one or both banks are depleted. The user resets the primary bank by turning the lever.



FOR LIQUID
CYLINDERS



- ▶ Connects to remote alarm systems. Up to 3 amps 30 volts (DC) or 2 amps 250 volts (AC) Visual remote alarm is standard. Audio/Visual alarm optional.
- ▶ Electrical - 115 volts (AC).
- ▶ Maximum inlet pressure 350 PSIG
- ▶ Maximum flow rate

240	750 SCFH
240HP	800 SCFH
- ▶ Adjustable line regulator

240	40-85 PSIG
240HP	40-180 PSIG
- ▶ Manifold outlet - 1/2" NPT
- ▶ Relief valve outlet - 1/4" NPT
- ▶ Minimum inlet

240	125 PSIG
240HP	250 PSIG
- ▶ 240 Series for use with 235 PSIG relief valve liquid cylinders
- ▶ 240HP Series for use with 350 PSIG relief valve liquid cylinders

ORDERING INFORMATION

240	XX(XX)	XX(XX)	XXX
Series	Right Header (# cylinders)	Left Header (# cylinders)	Gas Service
240	72" PIGTAILS	72" PIGTAILS	320-Carbon Dioxide
240HP	1R72	1L72	540-Oxygen
	2R72	2L72	580-Argon/Nitrogen
	3R72	3L72	326-Nitrous Oxide

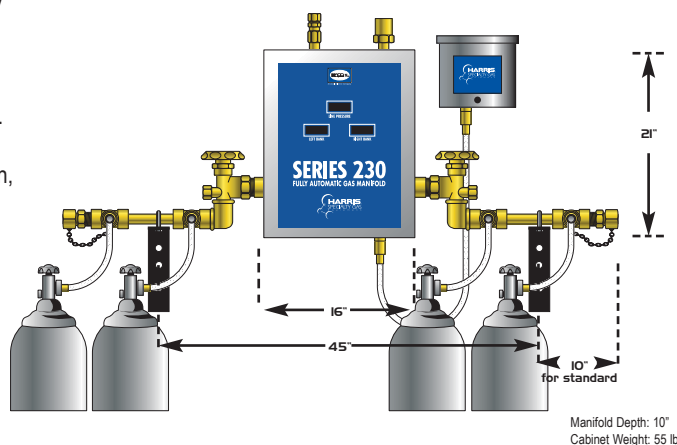
Series 230 Fully Automatic Switchover

The Series 230 Manifold provides fully automatic system control. An Integrated Circuit Board monitors cylinder bank pressure electronically, controlling changeover and eliminating the need to manually reset levers or valves. Easy-to-read digital displays show the line and individual bank pressures. A series of lights for each bank indicates whether the bank is "in service", "ready for use", or bank depleted".

- ▶ Connects to remote alarm systems. Up to 3 amps 30 volts (DC) or 2 amps 250 volts (AC) Visual remote alarm is standard. Audio/Visual alarm optional.
- ▶ Electrical - 115 volts (AC).
- ▶ Fully Automatic Changeover - No levers to reset. Continuous, uninterrupted gas flow. The only manual function is to replace depleted cylinders.
- ▶ LED indicators provide system status for each bank. Lights will indicate "In Service", "Ready for use" or "Bank Depleted".
- ▶ Large digital display provides constant read out of bank pressure and delivery pressure.
- ▶ Displays readout in PSIG, KPA or BAR.
- ▶ Micro controller monitors all functions and controls changeover.
- ▶ Built to accommodate future cylinder expansion by adding header extensions.
- ▶ Special header configurations available upon request.
- ▶ Available for the following gases: Air, Argon, Carbon Dioxide, Helium, Nitrogen, Nitrous Oxide, and Oxygen.
- ▶ Optional Audio/Visual Alarm and Floor Stand available.

SPECIFICATIONS

- ▶ Maximum inlet pressure 3000 PSIG
(2000 PSIG for CO₂ & N₂O)
- ▶ Delivery Pressure:
 - 230 40-100 PSIG
 - 230HL 40-100 PSIG
 - 230HP 100-190 PSIG
- ▶ Maximum Flow:
 - 230 2000 SCFH
 - 23035 SCFH
(CO₂ & N₂O)
 - 230HL500 SCFH
(CO₂ & N₂O with heater)
 - 230HP2500 SCFH
- ▶ Manifold Outlet: 1/2" MNPT.
- ▶ Relief Valve Outlet: 1/2" MNPT.
- ▶ 24" flexible stainless steel pigtailed with check valves.
- ▶ 1/2" brass, silver brazed headers



ORDERING INFORMATION

230	XX(XX)	XX(XX)	XXX
SERIES	Right Header (# cylinders)	Left Header (# cylinders)	Gas Service
230 (40-100 PSIG)	24" Pigtailed 1R 2R 3R 4R	24" Pigtailed 1L 2L 3L 4L	320-Carbon Dioxide 326-Nitrous Oxide 346-Air 540-Oxygen 580-Argon/Nitrogen 580H-Helium 590-Air
230HL (40-100 PSIG) (For CO ₂ and N ₂ O, 500 SCFH heater included)	36" Pigtailed 1R36 2R36 3R36 4R36	36" Pigtailed 1L36 2L36 3L36 4L36	
230HP (100-190 PSIG)			

Manifold Headers

- ▶ Wall brackets and header valves included
- ▶ Brass headers feature packed stem valve design
- ▶ Stainless steel header valves feature packless valve design
- ▶ Brass headers are 1/2" NPT silver brazed pipe
- ▶ Stainless headers are 1/2" NPT GTAW pipe, electropolished
- ▶ Order pigtails separately



Right Header Shown

Material	Cylinders	Right Header		Left Header	
		Right Hand Thread	Left Hand Thread	Right Hand Thread	Left Hand Thread
BR-Brass	2 Cylinders	9103309	9103311	9103310	9103312
	3 Cylinders	9103313	9103315	9103314	9103316
	4 Cylinders	9103317	9103319	9103318	9103320

Liquid Cylinder Performance Data

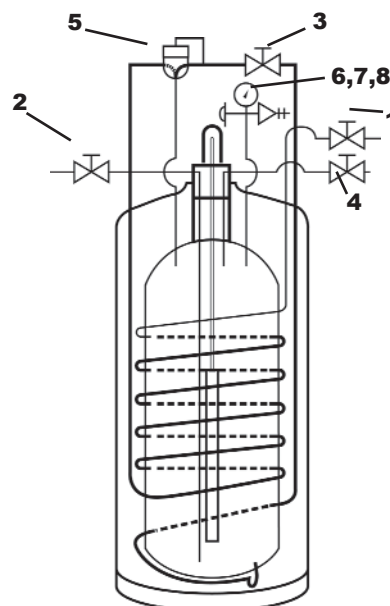
Specifications

Model	Size Pressure	160 MP	160 HP	180 MP	180 HP	200 MP	200 HP	230 MP	230 HP	265 MP	265 HP
Capacity											
Liquid(Gross)	(liters)	176	176	196	196	209	209	240	240	276	276
Liquid(Net)	(liters)	165	165	185	185	196	196	230	230	265	265
Gas(N)*	ft3/Nm3	3685/97	3464/91	4099/108	3864/102	4375/115	4072/108	5024/132	4734/124	5769/152	5438/143
Gas(O2)*	ft3/Nm3	4577/120	4348/114	5096/134	4843/127	5435/143	5048/133	6244/164	5930/156	7186/189	6811/179
Gas(Ar)*	ft3/Nm3	4448/117	4226/111	4961/130	4709/124	5290/139	4932/130	6073/160	5763/151	6982/183	6634/174
Gas(CO2)*	ft3/Nm3	--	3382/89	--	3766/99	--	4011/105	--	4614/121	--	5305/132
Gas(N2O)*	ft3/Nm3	--	3207/84	--	3574/94	--	3810/100	--	4378/115	--	5034/132
Performance											
NER(N2)	% per day	2	2	1.9	1.9	1.85	1.85	1.8	1.8	2	2
NER(O2-Ar)	% per day	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.4	1.4
NER(CO2-N2O)	% per day	--	0.5	--	0.5	--	0.5	--	0.5	--	0.5
Gas Flow(N2,O2,Ar)	ft3/hr	350/9.2	350/9.2	350/9.2	350/9.2	400/10.5	400/10.5	400/10.5	400/10.5	400/10.5	400/10.5
Gas Flow(CO2,N2O)	ft3/hr	--	110/2.9	--	110/2.9	--	110/2.9	--	110/2.9	--	110/2.9
Dimensions & Pressure Ratings											
Relief Valve Setting	psig/bar	230/16	350/24	230/16	350/24	230/16	350/24	230/16	350/24	230/16	350/24
DOT/CTC Rating		4L200	4L292	4L200	4L292	4L200	4L292	4L200	4L292	4L200	4L292
Diameter	in/cm	20/50.8	20/50.8	20/50.8	20/50.8	20/50.8	20/50.8	26/66.0	26/66.0	26/66.0	26/66.0
Height	in/cm	59.6/151.3	59.6/151.3	63.5/161.3	63.5/161.3	65.8/167.1	65.8/167.1	52.9/131.9	52.9/131.9	57.8/146.8	57.8/149.8
Empty Weight	lb/kg	250/113.4	280/126.9	260/117.9	300/136.1	280/126.9	320/145.1	300/136.1	340/154.2	340/154.2	360/163.6
Full Weight(N2)	lb/kg	517/234	531/241	557/253	580/263	597/271	618/280	664/301	683/310	758/344	754/343
(O2)	lb/kg	629/285	640/290	682/309	701/318	730/331	747/339	817/370	831/377	935/424	924/420
(Ar)	lb/kg	710/322	717/325	773/351	787/357	827/375	839/380	928/421	936/424	1062/481	1046/475
(CO2)	lb/kg	--	667/303	--	731/331	--	779/353	--	868/393	--	967/439
(N2O)	lb/kg	--	647/293	--	709/321	--	756/343	--	841/381	--	936/425

*AT RELIEF VALVE SETTINGS

NOMENCLATURE

1. Gas Used Valve- For gas withdrawal
2. Fill/Liquid Valve- For filling or fluid withdrawal operations.
3. Pressure Control Valve- To isolate (on/off) the pressure control regulator.
4. Vent Valve- to vent valve
5. Combination Pressure Control Regulator- To automatically control operating pressure.
6. Pressure Gauge- Indicates cylinder pressure
- 7 & 8. Relief Valves, Rupture Disk
9. Liquid Level Gauge- To approximate the liquid contents of the liquid cylinder



Data provided by CHART® Industries

Manifold Accessories



Remote Alarm Kits Not For Fuel Gas Service

PART NO.	DESCRIPTION	USE WITH MANIFOLD SERIES
4300340	Visual Only	Standard on 220, 230, 240 Systems
4300341	Visual and Audio	Optional on 220, 230, 240 Systems
4300342	Visual and Audio for Two Gas System	Optional on 220, 230, 240 Systems

Remote Alarm Kits For Fuel Gas Service

PART NO.	GAS SERVICE	DESCRIPTION	USE WITH MANIFOLD SERIES
4300343	Acetylene	Visual and Audio	Standard on 220 Acetylene Systems
4300344	Hydrogen	Visual and Audio	Standard on 220 Hydrogen Systems
4300345	LPG Gases	Visual and Audio	Standard on 220 LPG Gas Systems

Fuel Gas Safety Kits (kit includes piping)

PART NO.	GAS SERVICE	DESCRIPTION	FLOW CAPACITY	USE WITH MANIFOLD SERIES	RELIEF VALVES
4300346	LPG/H ₂	Dry Arrestor Kit	300 SCFH	Optional on 220 LPG/H ₂ Systems	35 PSIG
4300347	Acetylene	Hydraulic Arrestor Kit	300 SCFH	Optional on 220 Acetylene Systems	20 PSIG

Flashback Arrestors

PART NO.	GAS SERVICE	DESCRIPTION	FLOW CAPACITY	INLET AND OUTLET CONNECTIONS	RELIEF VALVES
4300348	Acetylene	Dry Arrestor	300 SCFH	1/2" NPT	20 PSIG
4300349	LPG/Hydrogen	Dry Arrestor	300 SCFH	1/2"NPT	35 PSIG
4300350	Acetylene	Hydraulic Arrestor	300 SCFH	1" NPT	20 PSIG
4300354	LPG/Hydrogen	Hydraulic Arrestor	300 SCFH	1" NPT	40 PSIG
4300357	-	Floor Stand	300 SCFH	-	-

Manifold Accessories

Header Extension

Part No.	Materials	Length	Connections	Header Plug
9103300	Brass	10"	1/2" NPT	9005711
9103304	Stainless Steel	10"	1/2" NPT	9005715



Adjustable Wall Bracket

Part No.	Description
9103308	90°, Black, includes u-bolt and mounting clamp



Header Valves - Station Valves

Part No.	Material	Valve Type	Inlet	Outlet
9005700	Brass	Packed Stem	1/2" MNPT	580 CGA
9107062	Stainless Steel	Diaphragm	1/4" MNPT	1/4" FNPT
9005706	Brass	Master Shut-Off Valve	1/2" FNPT	1/2" FNPT
9005086	Brass	Station Oxygen	1/2" MNPT	7/8"-14-RH
9005088	Brass	Station Fuel	1/2" MNPT	7/8"-14-LH



Diaphragm Valve



Master Shutoff Valve



Packed Stem Valve



Station Valve

Flash Arrestors

Part No.	Material
4300378	1/4" FNPT x 1/4" FNPT



Provides 3-way protection which prevents the flashback of fuel gas and oxygen. An internal check valve prevents backflow while 3 feet of coiled stainless steel tubing absorbs the heat and extinguishes the flame from a flashback. The flashback closes the shut-off valve eliminating the possibility of the flame propagating upstream. The flash arrestor can be used with oxygen and/or fuel gases.

Manifold Connection Fittings

Part No.	Material	Description	Pressure Rating PSIG
9005701	Brass	1.00 - 11.5 NPS union nut, RH	3000
9005725	Brass	1.00-11.5 NPS union nut, LH	3000
9005703	Brass	1/2 NPT union nipple, 3" long	3000
9005759	Brass	3/8" NPT union nipple 3" long	3000
9005708	Brass	1.00 - 11.5 NPS x 1/2 NPT union bushing, RH	3000
9005726	Brass	1.00 - 11.5 NPS x 1/2 NPT union bushing, LH	3000
9005747	Brass	1.00 - 11.5 NPS x 3/8 NPT union bushing, RH	3000
9005727	Brass	1.00 - 11.5 NPS x 3/8 NPT union bushing, LH	3000



Union Nipple



Union Nut



Union Bushing

Manifold Accessories



Flexible Pigtails

PART NO.	OUTER MATERIAL & FITTINGS	INNER CORE	LENGTH	CONNECTIONS	PRESSURE RATING PSIG
9005745	Stainless Steel	PTFE	24"	1/4" FNPT x 1/4" FNPT	3000
9005731	Stainless Steel	Stainless Steel	24"	1/4" FNPT x 1/4" FNPT	3000
4300534	Stainless Steel	PTFE	36"	1/4" MNPT x 1/4" MNPT	5500
4300537	Stainless Steel	PTFE	72"	1/4" MNPT x 3/8" MNPT	5500
9005769	Stainless Steel	Stainless Steel	36"	1/4" FNPT x 1/4" FNPT	3000
9005770	Stainless Steel	PTFE	36"	1/4" FNPT x 1/4" FNPT	3000
9005771	Stainless Steel	Stainless Steel	36"	1/4" FNPT x 3/8" FNPT	3000
9005754	Stainless Steel	Stainless Steel	24"	1/4" FNPT x 3/8" FNPT	3000
9005729	Stainless Steel	PTFE	24"	1/4" FNPT x 3/8" FNPT	3000
9005768	Stainless Steel	PTFE	36"	1/4" FNPT x 1/4" FNPT	3000

Replacement Pigtails - Pigtails include checkvalve at cylinder connection

PART NO.	INNER CORE	CYLINDER CONNECTION	LENGTH	MANIFOLD CONNECTIONS	PRESSURE RATING PSIG
9103352	PTFE	300 A	24"	510	500
9103353	PTFE	320	24"	580	3000
9103354	PTFE	326	24"	580	3000
9103355	PTFE	346	24"	580	3000
9103356	PTFE	350	24"	350	3000
9103357	Thermo Plastic	350 H	24"	350	3000
9103358	PTFE	510	24"	510	500
9103359	PTFE	510 A	24"	510	500
9103360	PTFE	540	24"	540	3000
9103361	PTFE	580	24"	580	3000
9103362	Thermo Plastic	580 H	24"	580	3000
9103363	PTFE	300 A	36"	510	500
9103364	PTFE	320	36"	580	3000
9103365	PTFE	326	36"	580	3000
9103366	PTFE	346	36"	580	3000
9103367	PTFE	350	36"	350	3000
9103368	Thermo Plastic	350 H	36"	350	3000
9103369	PTFE	510	36"	510	500
9103370	PTFE	510 A	36"	510	500
9103371	PTFE	540	36"	540	3000
9103372	PTFE	580	36"	580	3000
9103373	Thermo Plastic	580 H	36"	580	3000

Manifold Accessories

Station Drops

Equipped with an in-line shut-off valve, drip leg, outlet cap, chain and labeled for the gas type

PART NO.	GAS SERVICE	OUTLET CONNECTION	LENGTH	DESCRIPTION
4300361	Acetylene	7/8"-14 LH	25"	1/2" Single Outlet Station Drop
4300362	Compressed Air	9/16"-18 RH	25"	1/2" Single Outlet Station Drop
4300363	Argon	5/8"-18 RH	25"	1/2" Single Outlet Station Drop
4300364	Carbon Dioxide	5/8"-18 RH	25"	1/2" Single Outlet Station Drop
4300365	Helium	5/8"-18 RH	25"	1/2" Single Outlet Station Drop
4300366	Hydrogen	7/8"-14 LH	25"	1/2" Single Outlet Station Drop
4300367	Nitrogen	5/8"-18 RH	25"	1/2" Single Outlet Station Drop
4300368	Oxygen	7/8"-14 RH	25"	1/2" Single Outlet Station Drop
4300369	LPG Gases	7/8"-14 LH	25"	1/2" Single Outlet Station Drop
4300391	Acetylene	7/8"-14 LH	35"	1/2" Double Outlet Station Drop
4300392	Compressed Air	9/16"-18 RH	35"	1/2" Double Outlet Station Drop
4300393	Argon	5/8"-18 RH	35"	1/2" Double Outlet Station Drop
4300394	Carbon Dioxide	5/8"-18 RH	35"	1/2" Double Outlet Station Drop
4300395	Helium	5/8"-18 RH	35"	1/2" Double Outlet Station Drop
4300396	Hydrogen	7/8"-14 LH	35"	1/2" Double Outlet Station Drop
4300397	Nitrogen	5/8"-18 RH	35"	1/2" Double Outlet Station Drop
4300398	Oxygen	7/8"-14 RH	35"	1/2" Double Outlet Station Drop
4300399	LPG GASES	7/8"-14 LH	35"	1/2" Double Outlet Station Drop



Sample Manifold Station Drop Shown
Part No.: 4300361

Cylinder Racks & Process Stations



G 400 Four Cylinder Floor Stand

PART NO.	MODEL NO.	SIZE	WEIGHT
4302661	G400	24"x36.5"x30"	65 lb.
4302665	G600	24"x48.5"x30"	81 lb.

The Stationary Cylinder Floor Stands and Process Stations are designed and built for the safe storage of industrial and commercial use gas cylinders up to 12 inch diameter, these stationary racks are constructed from 11 gauge and heavier plate steel. The cylinder capacity racks share the 1.5 inch polypropylene straps and steel cinch buckles used in our brackets. Fully welded construction and quality epoxy powder paint finishes provide structural integrity and long service life. As with our cylinder brackets, surfaces coming into direct contact with the cylinders are protected with steel reinforced vinyl edge guards, protecting your equipment. Units ship partially disassembled for freight savings.



G 600 Six Cylinder Floor Stand



G 277 Two Cylinder Process Station Rack



G 400P Four Cylinder Process Station



G 600P Six Cylinder Process Station

PART NO.	MODEL NO.	SIZE	WEIGHT
4302673	G277	12"x28"x72"	56 lb.
4302675	G400P	24"x36.5"x72"	98 lb.
4302676	G600P	24"x48.5"x30"	119 lb.

Accessories

Gauges

I-1/ 2" Dual Scale Steel (psi/kPa)

PART NO.	PRESSURE PSI/KPA
9006044	30/200 Red Zone
9006051	30/200
9006035	150/1000
9006030	400/2800
9006025	4000/28000

NOTE: 1/8-NPT Stem

2" Dual Scale Steel (psi/kPa)

PART NO.	PRESSURE PSI/KPA
9006127	30/200
9006128	30/200
9006120	60/400
9006125	150/1000
9006130	400/2800
9006135	4000/28000

NOTE: 1/4-NPT Stem

2-I/ 2" Dual Scale Brass (psi/kPa)

PART NO.	PRESSURE PSI/KPA
9006100	30/200 Red Zone
9006102	30/200
9006070	60/400
9006075	100/700
9006065	200/1400
9006060	400/2800
9006085	2000/14000
9006050	4000/28000
9006197	6000/40000

NOTE: 1/4-NPT Stem

Flowgauges* I/4-NPT

SIZE	PART NO.	FLOW SCFH	(drill)5/8"F
2"	9006133	0-60	(#59-P/N 9100408)
2"	9006417	5-30	(#64-P/N 9100906)
2 1/2"	9006139	0-100	(76-P/N 9100908)

NOTE: 1/4-NPT Stem

* Flowgauge must be matched with the proper drilled orifice and gas to be accurate.



50MM Dual Scale ABS(psi/Bar)

PART NO.	PRESSURE PSI/Bar
9006257	30/2
9006255	100/7
9006256	400/28
9006254	4000/300

NOTE:

1/8-BSP Stem - Requires Gasket PN - 9000643

50MM Dual Scale ABS(SCFH/LPM)

PART NO.	PRESSURE SCFH/LPM
9006253	60 CFH/30 LPM
9006303	60 CFH/15 LPM

NOTE:

1/8-BSP Stem - Requires Gasket PN - 9000643

Regulator Needle Valves-NPT

PART NO.	INLET	OUTLET
9100412	1/4"	1/4"
9100416	1/4"	9/16"-18 R.H.
9100414	1/4"	9/16"-18 L.H.



Hose

PART NO.	DESCRIPTION
4300556	3/16" X 12' twin hose
4300005	3/16" X 12' twin hose, A & B fittings
4300557	3/16" X 20' twin hose
4300533	1/4" X 20' twin hose, 'T' grade (Alt. fuel)
4300532	3/16" X 20' twin hose, 'T' grade (Alt. fuel)
4300500	1/4" X 20' twin hose
4300530	1/4" X 50' twin hose
4300138	3/16" X 10' single line inert gas hose



Tip Nuts

PART NO.	MODEL NO.	DESCRIPTION
9002560	6259	Tip Nut (for 98, 62, 72-3, 71-3, 39-3, 49-3, 42-4)
9005227	7259-2R	Tip Nut (for V-1350)
9005236	6259-BM	Tip Nut (for V-2460, V-62-4)
9002537	213159	Tip Nut (for 2101, 3101, 880)
9002925	110059	Tip Nut (for 1000)
9008437	3659	Tip Nut (for 36 CA's)



Pro Series



Classic Series

Inlet Nuts and Stems

Harris inlet assemblies feature forged brass nuts and machined brass inlet stems.

**CGA 200
"MC" TANK**

CGA 300

CGA 320

CGA 326

CGA 346

CGA 350

CGA 510

**CGA 520
"B" TANK**

CGA 540

CGA 580

CGA CONN NO.	STANDARD CONN FOR (TYPE GAS)	NUT NO.	STEM NO. (1/2" - 27)*	STEM NO. (1/4" - NPT)	RETAINING RING NO.
CGA 200	ACETYLENE	9003056	9100335	-	9004030
		9005132	-	9005126	9005133
CGA 300	ACETYLENE	9002984	9100740	9005108	9004030
CGA 320	CARBON DIOXIDE (GASKET 9002910)	9002986	9100746	9005114	9004030
CGA 326	NITROUS OXIDE	9002966	9101320	9005149	9004030
CGA 346	MEDICAL AIR	9002969	9100727	9000319	9004030
CGA 350	HYDROGEN	9003006	9100760	9005145	9004030
CGA 510	ACETYLENE	9002972	9100704	9005109	-
	PROPANE	9002974	9100704	9005109	-
CGA 520	ACETYLENE	9002980	9100738	9005125	9004030
CGA 540	OXYGEN	9002950	9100728	9005110	9004030
CGA 580	NITROGEN				
	ARGON, HELIUM	9003048	9100704	9005109	-
CGA 590	INDUSTRIAL AIR (WAS ARGON, HELIUM, NITROGEN)	9003052	9100704	9005109	-

NOTE: Contact Harris Calorific customer service for additional lengths.

High Pressure 5500 PSIG Inlet Stems and Nuts

CGA CONN NO.	STANDARD CONN FOR (TYPE GAS)	NUT NO.	STEM NO. (1/4" - NPT)	RETAINING RING NO.
CGA 347	AIR	9003001	9005161	-
CGA 680	Ar, He, N2	9003000	9005160	-
CGA 695	H2	9002963	9005160	-



Surge Guard Protection

CGA CONN NO.	STANDARD CONN OXY	STEM NO. (1/2" - 27)*	STEM NO. (1/4" - NPT)
540	OXYGEN	9105600	9105602

*Stem will fit Harris regulator only.

CGA 590

Tip Flow Charts

6290 & 6290S - Cutting Tip Flow Chart - Acetylene

TIP SIZE	PLATE THICKNESS IN INCHES	CUTTING OX PRESSURE PSIG	CUTTING ORIFICE DRILL SIZE	CUTTING OXYGEN FLOW CFH	P.H. OXYGEN FLOW CFH		ACETYLENE PRESSURE PSIG	ACETYLENE FLOW CFH
					6290	6290S		
000	Light Gauge to 3/16"	15 - 20	#68	20-25	15	- - -	5-15	10-15
00	3/16"-3/8"	20-25	#64	30-35	15	- - -	5-15	10-15
1 & 1S	5/8"-1"	35-40	#56	75-85	22	25	5-15	15-25
2 & 2S	1"-2"	40-45	#52	160-175	20	30	5-15	20-30
3 & 3S	2"-3"	45-50	#48	250-270	20	35	5-15	20-35
4 & 4S	3"-6"	50-75	#42	425-575	25	40	10-15	25-40
5S	6"-8"	65-80	#35	650-800	35	50	10-15	35-50
6S	8"-12"	70-90	#30	900-1100	40	60	10-15	40-60

NOTES:

Preheat flows are average cutting conditions with hand torches.

6290S tips are heavy preheat tips for unusually rusty, scaled, or heavily painted plate.

Cleaning: Use Harris Tip Cleaner C-9 (PN 9000156) for cleaning preheat holes and cleaning spatter from tip face. Use Harris E-9 (PN 9000160) on 6290AC tips.

Hose: Use 3/8" I.D. hose for tip size 4 or larger and 1/4" I.D. or larger for Tip sizes 1 and 2.

6290NX, NFF, NXP and NXM - Cutting Tip Flow Chart - Alternate Fuels

PLATE THICKNESS IN INCHES	TIP SIZE AND STYLE	DRILL SIZE	OXYGEN*** PRESS (PSIG)	CUTT. OX FLOW (SCFH)	P.H. OX* (SCFH)	FUEL FLOW** (SCFH)
Light Gauge to 3/16"	000NX	#68	15-30	20-30	30	7.5
3/16"-3/8"	00NX	#64	20-30	30-40	35	8.7
3/8"-5/8"	0NX	#60	30-40	50-65	35	8.7
5/8"-1"	1NX	#56	35-50	75-100	35	8.7
1"-2"	2NX	#52	40-55	160-210	40	10
2"-3"	3NX	#48	45-60	250-325	40	10
3"-6"	4NX	#42	50-75	425-575	50	12.5
6"-8"	5NX	#35	65-80	650-800	60	15
8"-12"	6NX	#30	70-90	900-1100	70	17.5
Light Gauge to 5/8"	1NFF	#56	20-35	45-70	70	17.5
5/8"-2"	2NFF	#53	30-55	100-160	70	17.5
2"-4"	3NFF	#47	45-65	265-350	70	17.5
4"-6"	4NFF	#42	55-75	450-575	70	17.5
6"-8"	5NFF	#35	60-80	590-800	70	17.5
8"-10"	6NFF	#31	80-90	800-950	70	17.5
10"-12"	7NFF	#29	80-90	980-1135	70	17.5
Light Gauge to 3/16"	000NX&NXM	#68	15-30	20-30	30	11.5
3/16"-3/8"	00NX&NXM	#64	20-30	50-65	30	11.5
3/8"-5/8"	0NX&NXM	#60	30-40	75-100	30	11.5
5/8"-1"	1NX&NXM	#56	35-50	50-65	30	11.5
1"-2"	2NX&NXM	#52	40-55	160-210	30	11.5
2"-3"	3NX&NXM	#48	45-60	250-325	30	11.5
3"-6"	4NX&NXM	#42	50-75	425-575	30	11.5
6"-8"	5NX&NXM	#35	65-80	650-800	30	11.5
8"-12"	6NX&NXM	#30	70-90	900-1100	30	11.5

*P.H. Flows are for average cutting conditions with hand torches.

**Fuel flows are calculated for propane at 4:1 ratio or propylene at 2.6:1 ratio- For natural gas use a 2:1 ratio.

***Fuel pressure settings 5-15 PSIG for equal pressure equipment and 4oz. to 2lbs. for injector equipment.

Pressure on size #4 and above have been established using 3/8" ID hose 25' in length.

Tip Flow Charts

6290 - AC Cutting Tip Flow Chart - Acetylene

TIP SIZE	PLATE THICKNESS	CUTTING OX PRESSURE	SCFH CUTTING OX FLOW	SCFH P.H. OX FLOW	SCFH ACETYLENE FLOW
00	3/16" - 3/8"	15 - 30	28-35	10-20	9-18
0	3/8" - 5/8"	20 - 35	35-53	10-20	9-18
1	5/8" - 1"	30 - 50	53-88	20-40	18-36
2	1" - 2"	40 - 65	141-212	20-40	18-36
3	2" - 4"	40 - 65	176-247	20-40	18-36
4	4" - 7"	50 - 80	318-494	20-40	18-36
5	7" - 10"	65 - 80	459-565	35-60	32-54
6	10" - 12"	70 - 95	530-671	35-60	32-54

NOTES:

Preheat flows are average cutting conditions with hand torches.

6290S tips are heavy preheat tips for unusually rusty, scaled, or heavily painted plate.

Cleaning: Use Harris Tip Cleaner C-9 (PN 9000156) for cleaning preheat holes and cleaning spatter from tip face. Use Harris E-9 (PN 9000160) on 6290AC tips.

Hose: Use 3/8" I.D. hose for tip size 4 or larger and 1/4" I.D. or larger for Tip sizes 1 and 2.

I390N - Brazing Tip Flow Chart - Propane - E-43 Mixer (4N Thru 10N) & E2-43 Mixer (13N Thru 80N)

TIP SIZE	NORMAL BRAZING				MAX HEATING				RECOMMENDED HOSE ID Inches
	Oxygen Press. PSI	Flow PSI	Propane Press. PSI	Flow SCFH	Oxygen Press. PSI	Flow CFH	Propane Press. PSI	Flow CFH	
4N	2	20	1	5	3	30	2	7.5	3/16"
5N	2	22	1	5.5	4	35	3	7.8	3/16"
6N	2	25	2	6.3	5	45	3	11.2	3/16"
7N	3	30	2	7.5	6	55	4	13.8	3/16"
8N	3	35	2	7.8	8	70	6	17.5	1/4"
9N	4	40	3	10	10	85	7	21.3	1/4"
10N	4	45	3	11.2	12	100	8	25	1/4"
13N	7	100	4	25	12	150	8	38	1/4"
15N	12	150	8	38	15	200	12	50	3/8"
20N	15	200	12	50	20	250	16	63	3/8"
30N	18	225	14	56	25	300	20	75	3/8"
80N	20	250	16	63	30	325	24	81	3/8"

I390N - Brazing Tip Flow Chart - Propane - H-I6-E, H-I6-2E or D-85 MIXER

4N	2	20	1	5	3	30	2	7.5	3/16"
5N	2	22	1	5.5	4	35	2	7.8	3/16"
6N	3	25	2	6.3	6	45	4	11.2	3/16"
7N	3	30	2	7.5	9	55	5	13.8	1/4"
8N	4	35	2	7.8	13	70	6	17.5	1/4"
9N	5	40	3	10	16	85	7	21.3	1/4"
10N	6	45	4	11.2	20	100	8	25	1/4"

NOTES:

Normal brazing settings are for soft flames.

Max heating settings are for strong, forcing flames.

Flow rates are shown for 4:1 ratio carburizing. For 5:1 ratio oxidizing, multiply propane flow by 0.8 oxygen flow unchanged.

High purity propane grade HD-5 should be used with this equipment.

Propylene based fuels use ratios from 2.5:1 to 4:1 with the same oxygen flow rates as propane.

Hose sizes are suitable for lengths up to 25 feet. Increase the pressures for longer lengths.

Tip Flow Charts

I390, 23A90, 5090, & 8490 - Welding, Brazing Tip Flow Chart - Mapp Gas®

TIP SIZE	MAPP FLOW CFH	OXYGEN FLOW CFH	MAPP PRESS PSI	OXYGEN PRESS PSI	FLAME LENGTH INCHES	RECOMMENDED HOSE I.D. Min. In.
2	1-3	2.5-7.5	1/2-1	1/2-1	1/4"-1/2"	3/16"
3	2-4	5.0-10.0	1/2-1	1/2-1	3/8"-5/8"	3/16"
4	3-5	7.5-12.5	1/2-1	1/2-1	5/8"-7/8"	3/16"
5	4-6	10.0-15.0	1-1, 1/2	1- 1 1/2	7/8"-1", 1 3/8"	3/16"
6	5-8	12.5-20.0	1-1, 1/2	1 1/2-2	7/8"-1 3/8"	3/16"
7	6-10	15.0-25.0	1 1/2-2	2-3	1"-1 1/2"	3/16"
8	8-12	20.0-30.0	1 1/2-2	2-3	1"-1 1/2"	3/16"
9	10-16	25.0-40.0	2-3	3-5	1"-1 1/2"	3/16"
10	12-18	30.0-45.0	3-4	4-6	1"-1 1/2"	1/4"
13	15-25	37.5-62.5	6-8	8-10	1 1/4"-1 3/4"	1/4"
15	25-35	62.5-87.5	8-10	12-15	1 1/4"-1 3/4"	3/8"

NOTE: Oxygen flows are for neutral flame settings, with flame set to eliminate yellow feather on end of primary cone. At neutral flame is deep blue with longer primary zone than neutral acetylene flame. Higher flows may be used for heating with (approximately 10-20%) oxidizing flame (primary cone shorter and lighter blue). Hose sizes are suitable for hose lengths up to 25 feet. Higher pressures should be used for longer lengths. Caution: For continuous use, check allowable withdrawal rates with gas supplier, especially in low temperature operations. Heat output (BTU/Hr.) Mapp flow X 2400 (BTU/Cu.Ft.).

I390N - Brazing Tip Flow Chart With Four Ounces of Natural Gas

TIP SIZE	MIXERS	NORMAL BRAZING			MAX HEATING			Recommended Hose I.D.
		Oxygen Press PSI	Flow CFH	Nat. Gas Flow CFH	Oxygen Press PSI	Flow CFH	Nat. Gas Flow CFH	
4N	B-43-4	20	12	6	40	20	10	1/4"
5N	B-43-5	25	13	6.5	50	25	12.5	1/4"
6N	B-43-6	25	15	7.5	50	30	15	1/4"
7N	B-43-7	30	20	10.5	50	35	17.5	1/4"
8N	B-43-8	30	25	12.5	60	40	20	1/4"
9N	B-43-9	30	30	15	60	55	27.5	3/8"
10N	B-43-10	35	35	17.5	65	60	30	3/8"
13N	B-43-15	40	60	30	65	85	42.5	3/8"
15N	B-43-15	45	65	32.5	75	100	50	3/8"
20N	B-43-N	50	185	92.5	70	250	125	3/8"
30N	B-43-N	55	200	100	80	275	137.5	3/8"
80N	B-43-N	60	215	107.5	90	300	150	3/8"
4N	H-16-S	15	15	7.5	30	30	15	1/4"
5N	H-16-S	15	15	7.5	35	33	16.5	1/4"
6N	H-16-S	20	22	11	40	37	18.5	1/4"
7N	H-16-S	25	26	13	50	44	22	1/4"
8N	H-16-S	30	30	15	60	52	26	3/8"
9N	H-16-S	35	33	16.5	70	60	30	3/8"
10N	H-16-S	40	37	18.5	80	66	33	3/8"

NOTES:

Total heat output (BTU/Hr.) = Natural Gas Flow x 1000 (BTU/Cu.Ft.).

Flow rates based on methane (CH₄) fuel gas.

Normal (brazing) settings are for soft flames.

Max (heating) settings are for strong, forcing flames.

Gas valve must be throttled to set neutral flame.

At 2:1 oxygen/natural gas ration, oxygen valve is wide open.

These settings allow flame adjustments from carburizing (fuel rich) through neutral to oxidizing flames used for max heat output.

Hose sizes are suitable for lengths up to 25 feet. Increase oxygen pressure for longer lengths.

Tip Flow Charts

1390N - Brazing Tip Flow Chart - Propane - F43 Mixer & 43-2 Handle with Propane

TIP SIZE	NORMAL BRAZING				MAX HEATING			
	Oxygen		Propane		Oxygen		Propane	
	Press PSI	Flow CFH	Press PSI	Flow CFH	Press PSI	Flow CFH	Press PSI	Flow CFH
20N	10	200	2	50	20	350	5	88
30N	15	300	4	75	30	475	8	120
80N	25	400	6	100	50	700	12	175

NOTES:

Use 3/8 I.D. Hose

Pressures shown are suitable for lengths up to 25 feet.

Increase pressures for longer lengths.

Normal brazing settings are for soft flames.

Max heating settings are for strong, forcing flames.

Flow rates are shown for 4:1 ratio carburizing. For 5:1 ratio oxidizing, multiply propane flow by 0.8 oxygen flow unchanged.

High purity propane grade HD-5 should be used with this equipment.

Propylene based fuels use ratios from 2.5:1 to 4:1 with the same oxygen flow rates as propane.

Total heat output (BTU/Hr) = Fuel Gas Flow x 2563 (Propane).

Total heat output (BTU/Hr) = Fuel Gas Flow x 2370 (Propylene).

8490N - Tip Flow Chart - Four Ounce Natural Gas - B-I5-3S or H-I6-S Mixer

TIP SIZE	NORMAL BRAZING			MAX HEATING			Recommended Hose Size I.D.
	Oxygen Press PSI	Flow CFH	Nat. Gas Flow CFH	Oxygen Press PSI	Flow CFH	Nat. Gas Flow CFH	
4N	6	6	2	12	12	6	3/16"
5N	8	8	4	16	16	8	3/16"
6N	10	10	5	20	20	10	3/16"
7N	15	15	7.5	25	24	12	1/4"
8N	18	20	10	30	30	15	1/4"

8490N - Brazing Tip Flow Chart - Propane - B-I5-3s or H-I6-s Mixer

TIP SIZE	NORMAL BRAZING				MAX HEATING				Recommended Hose I.D.
	Oxygen Press PSI	Flow CFH	Propane Press PSI		Oxygen Flow PSI	Press PSI	Flow CFH	Propane Press PS I	Flow CFH
4N	2	8	1	2	3	14	1	3.5	3/16"
5N	2	10	1	2.5	4	18	1	4.5	3/16"
6N	3	12	1	3	5	24	2	6	3/16"
7N	4	20	1	4	5	30	2	7.5	1/4"
8N	5	24	2	6	6	36	3	9	1/4"

NOTES:

Normal brazing settings are for soft flames.

Max heating settings are for strong, forcing flames.

With oxygen valve wide open, the pressure settings allow carburizing (fuel rich), neutral, or oxidizing flames by adjustments to the fuel gas valve.

Hose sizes are suitable for lengths up to the fuel gas valve.

Increase pressure for longer lengths.

Natural gas flow rates based on methane (CH₄).

High purity propane (grade HD-5) should be used with this equipment.

Total heat output (BTU/Hr) = Fuel Gas Flow x 2563 (Propane).

Total heat output (BTU/Hr) = Fuel Gas Flow x 2370 (Propylene).

Tip Flow Charts

1390, 23A90, 5090 & 8490 - Welding, Brazing Tip Flow Chart - Acetylene

WELDING METAL THICKNESS	TIP SIZE	ACETYLENE FLOW CFH**		EQUAL PRESSURE*	RECOM. HOSE I.D.
		WELDING	HEATING		
1/64"	0	1-3	5	1	3/16"
1/32"	1	2-5	7	1	3/16"
3/64"	2	3-8	10	2	3/16"
1/16"	3	5-11	14	3	3/16"
3/32"	4	6-14	18	4	3/16"
1/8"	5	8-18	22	5	3/16"
3/16"	6	10-20	30	6	3/16"
1/4"	7	13-25	35	7	3/16"
5/16"	8	16-32	40	8	3/16"
3/8"	9	20-37	50	9	1/4"
1/2"	10	24-42	60	10	1/4"
3/4"	13	30-50	75	13	3/8"
1"	15	35-65	90	15	3/8"

*Oxygen and Acetylene pressures are set equal.

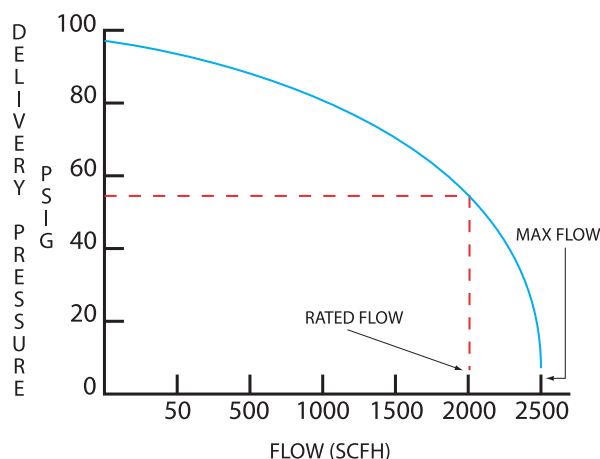
** Oxygen flow 1.1 times acetylene flow for neutral flame. Low flow set to clear smoke with acetylene only flowing (soft flame). High flow set to hold flame on tip with acetylene only flowing (harsh flame).

Caution: Flow rate should not exceed 1/7 of the acetylene cylinder contents. For higher flow rates, use additional cylinders manifold in parallel. Hose sizes are suitable for hose lengths up to 25ft. Higher pressures should be used for longer lengths. Heat output (BTU/Hr.) = acetylene flow X 1470 (1470 BTU/Cu.Ft.)

Regulator Performance Definitions

TABLE 1a.
GAS CORRECTION FACTORS

Carbon Dioxide	.81
Propane	.81
Propylene	.83
Argon	.85
Oxygen	.95
Air	1.00
Nitrogen	1.017
Acetylene	1.05
Methane	1.34
Helium	2.7
Hydrogen	3.8



1. What information can be determined from a flow curve?

The following sketch explains how to interpret the flow curves presented in this Catalog.

Maximum Flow - A rating defined as the maximum amount a regulator can flow when the set delivery pressure approaches 0 PSIG (horizontal axis on flow curve). This point on the curve represents a blanketing operation.

Rated Flow - A rating defined as 80% of the maximum flow. This point on the flow curve corresponds to typical operating conditions.

Note: All regulator flow curves in the catalog have been developed using air at 70°F. To obtain flow rates for other gases, multiply flow by the correction factor in Table 1a.

2. What is a Cv?

The Cv or the flow coefficient is a number which represents the flow capacity of a regulator for a given set of conditions. The Cv can be used to compare flow capacity between two regulators. The higher the Cv, the greater the flow capacity. The Cv values listed in this catalog represent the overall Cv.

3. What is pressure rise?

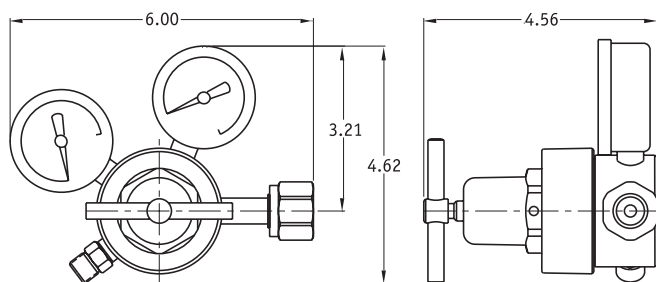
Pressure rise is the change in set delivery pressure as a result of a drop or decay in inlet pressure. For example, the rise on a Model 25 is expressed as .2 PSIG/100 PSIG

4. What is CGA E-4?

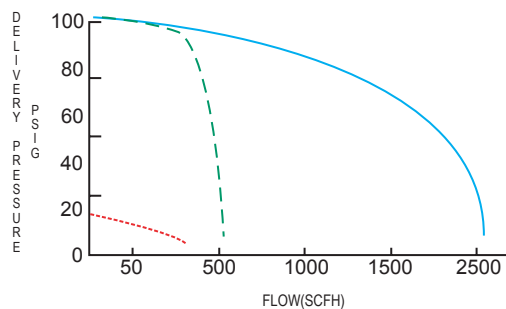
CGA E-4 is a regulator standard developed by the Industrial Gas Apparatus Committee of the Compressed Gas Association. The standard defines product safety requirements, product test requirements and performance characteristics to meet field applications.

Regulator Technical Data 30I & 2500

Model 30I



Regulator Weight: 2.2lbs.
Pressure Rise: .4 PSIG per 100 PSIG
Cv: .08

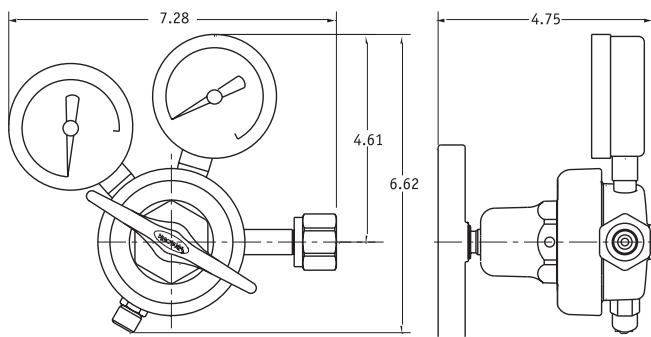


Model 30I Single Stage Regulator

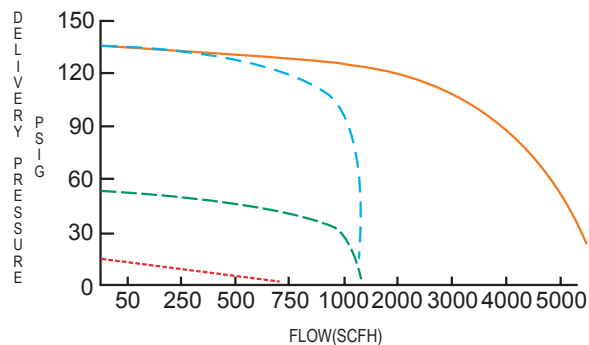
All flows based on air @ 70°F

- 301-100 @ 2000 PSIG inlet
- - - 301-100 @ 200 PSIG inlet
- ... 301-15 @ 200 PSIG inlet

Model 2500



Regulator Weight: 4.6lbs.
Pressure Rise: .3 PSIG per 100 PSIG
Cv: .17



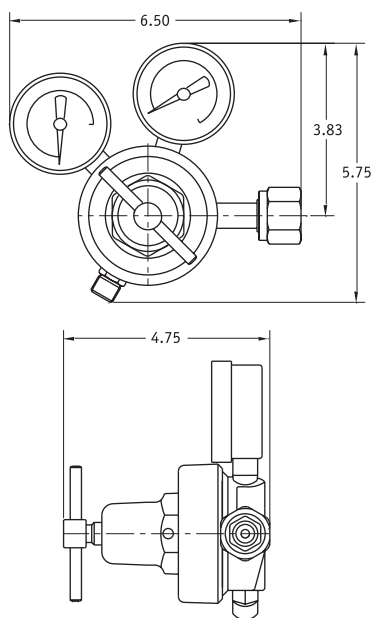
Model 2500 Single Stage Regulator

All flows based on air @ 70°F

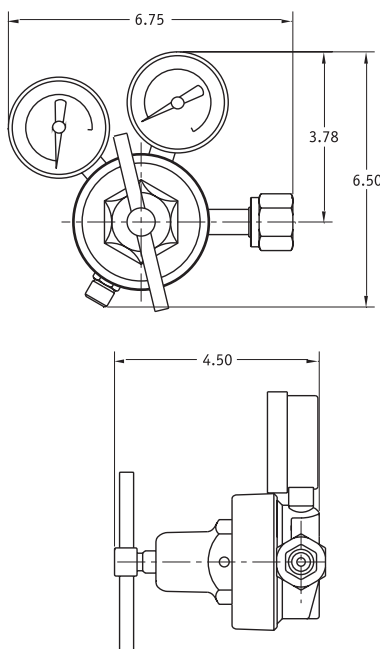
- 2500-125 @ 2000 PSIG inlet
- - - 2500-125 @ 200 PSIG inlet
- - - 2500-50 @ 200 PSIG inlet
- ... 2500-15 @ 200 PSIG inlet

Regulator Technical Data 25,29 & 425

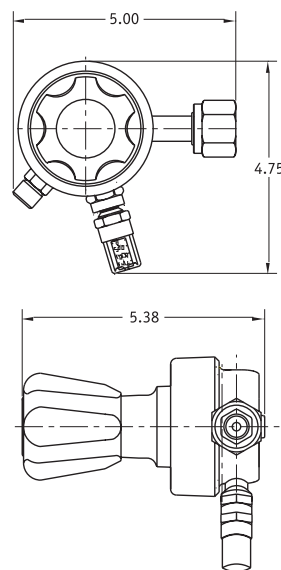
Model 25



Model 425



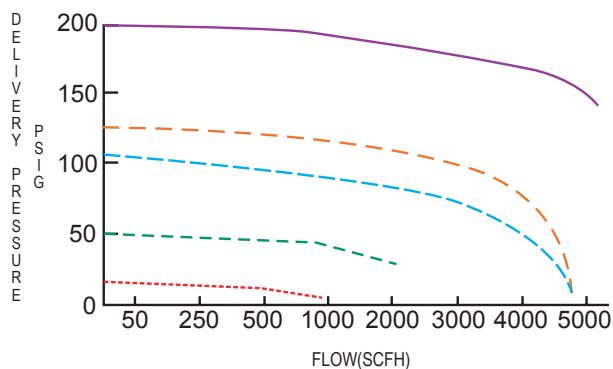
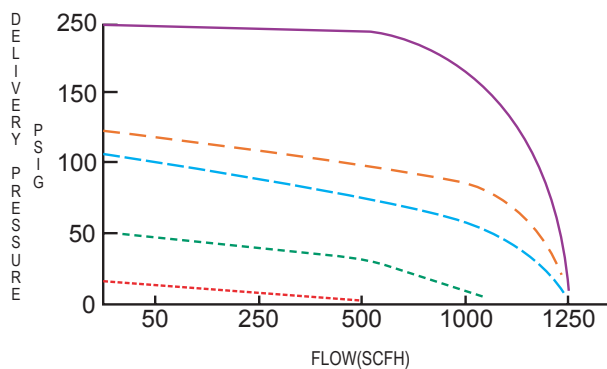
Model 29



Regulator Weight: 2.9lbs.
Pressure Rise: .2 PSIG per 100 PSIG
Cv: .17

Regulator Weight: 3.7lbs.
Pressure Rise: .2 PSIG per 100 PSIG
Cv: .17

Regulator Weight: 2.7lbs.
Pressure Rise: .2 PSIG per 100 PSIG
Cv: .17



Model 25,29 & 425 - 200 PSIG Inlet

All flows based on air @ 70°F

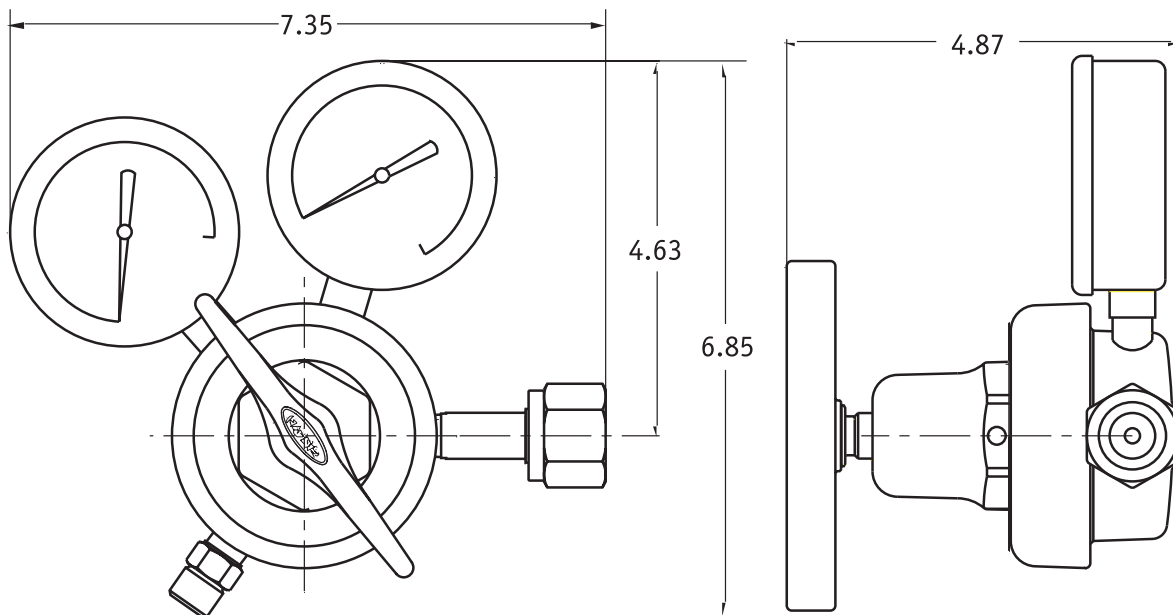
- 25,29,425-200 @ 200 PSIG inlet
- - - 29,425-125 @ 200 PSIG inlet
- - - 25-100 @ 200 PSIG
- - - 25,29,425-50 @ 200 PSIG inlet
- 25,29,425-15 @ 200 PSIG inlet

Model 25,29 & 425 - 2000 PSIG Inlet

All flows based on air @ 70°F

- 25,29,425-200 @ 2000 PSIG inlet
- - - 29,425-125 @ 2000 PSIG inlet
- - - 25-100 @ 2000 PSIG
- - - 25,29,425-50 @ 2000 PSIG inlet
- 25,29,425-15 @ 2000 PSIG inlet

Regulator Technical Data 3500



Regulator Weight: 4.6lbs.

For Models 3003504, 3003505, 3003514, 3003540, 3003541, 3003538, 3003539 and all 3510 Manifold Regulators

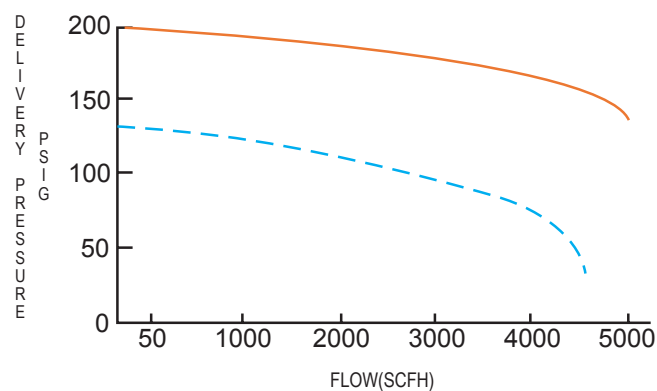
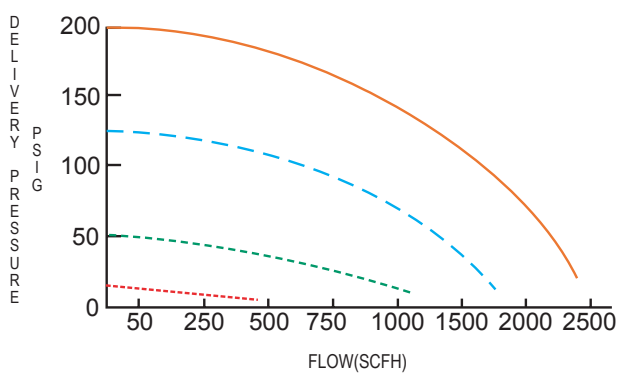
Pressure Rise: 1.6 PSIG per 100 PSIG

Cv: .55

For other models:

Pressure Rise: .9 PSIG per 100 PSIG

Cv: .4



Model 3500 Regulator - 200 PSIG Inlet

All flows based on air @ 70°F

- 3500-200 @ 200 PSIG inlet
- - - 3500-125 @ 200 PSIG inlet
- - - 3500-50 @ 200 PSIG inlet
- - - 3500-15 @ 200 PSIG inlet

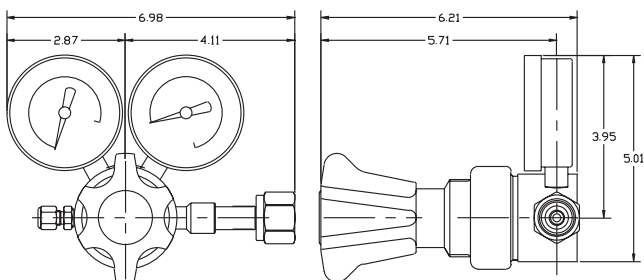
Model 3500 Regulator - 2000 PSIG Inlet

All flows based on air @ 70°F

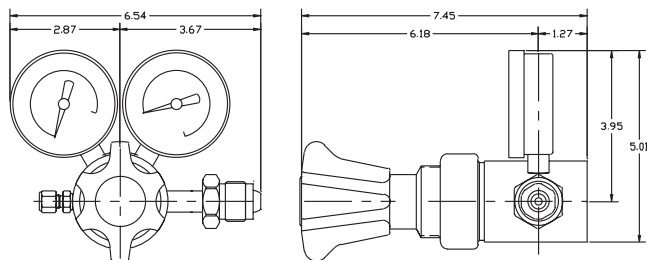
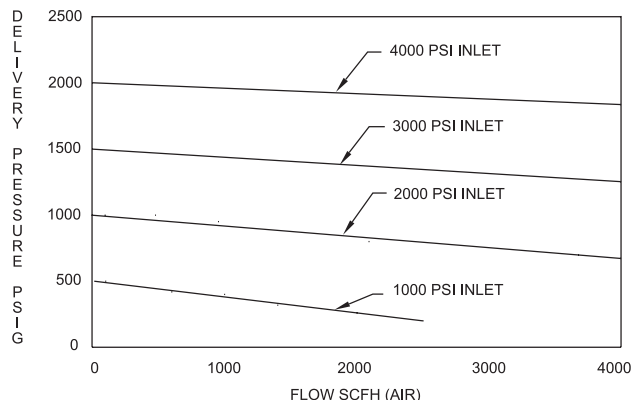
- 3500-200 @ 2000 PSIG inlet
- - - 3500-125 @ 2000 PSIG inlet

Regulator Technical Data 8700 & 25-500C

Model 8700

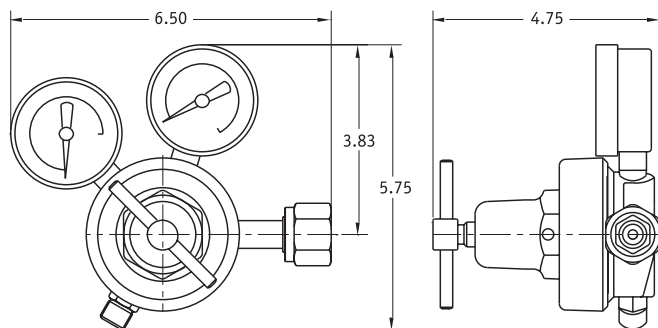


Regulator Weight: 5.8 lbs.
Pressure Rise: 3.3 PSIG per 100 PSIG
Cv: .08

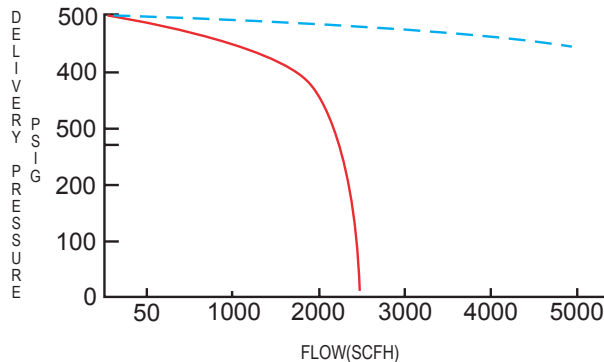


Regulator Weight: 7.0 lbs.
Pressure Rise: 3.3 PSIG per 100 PSIG
Cv: .08

Model 25-500C



Regulator Weight: 3.4lbs.
Pressure Rise: .2 PSIG per 100 PSIG
Cv: .17



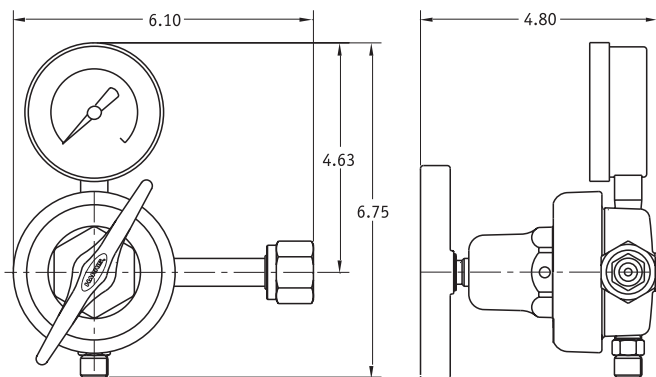
Model 25-500C High Pressure Single Stage Regulator

All flows based on air @ 70°F

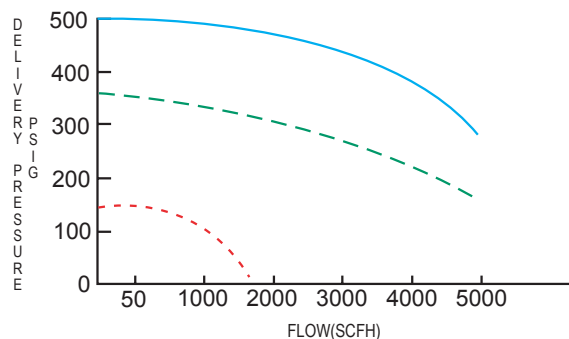
- 25-500C @ 500 PSIG inlet
- 25-500C @ 2000 PSIG inlet

Regulator Technical Data 330 & 447/547

Model 330



Regulator Weight: 4.3lbs.
Cv: .37

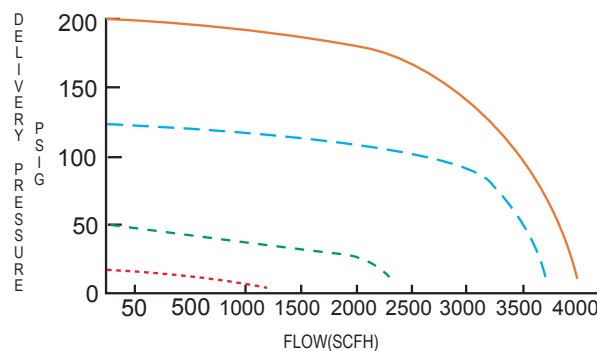
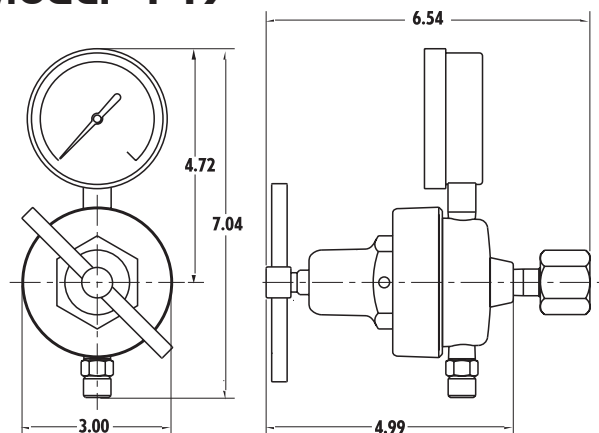


Model 330 Liquid Cylinder Regulator

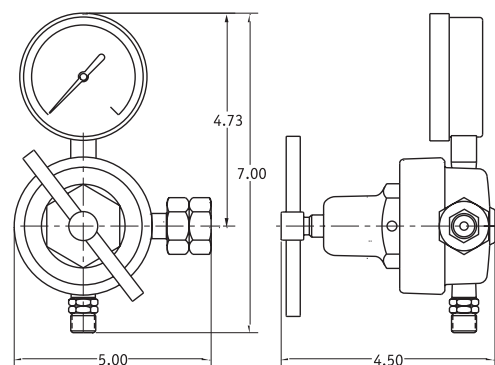
All flows based on air @ 70°F

- 330-125 @ 200 PSIG inlet
- - - 330-350 @ 400 PSIG inlet
- - - 330-500 @ 600 PSIG inlet

Model 447



Model 547



Regulator Weight: 3.6lbs.
Cv: .53

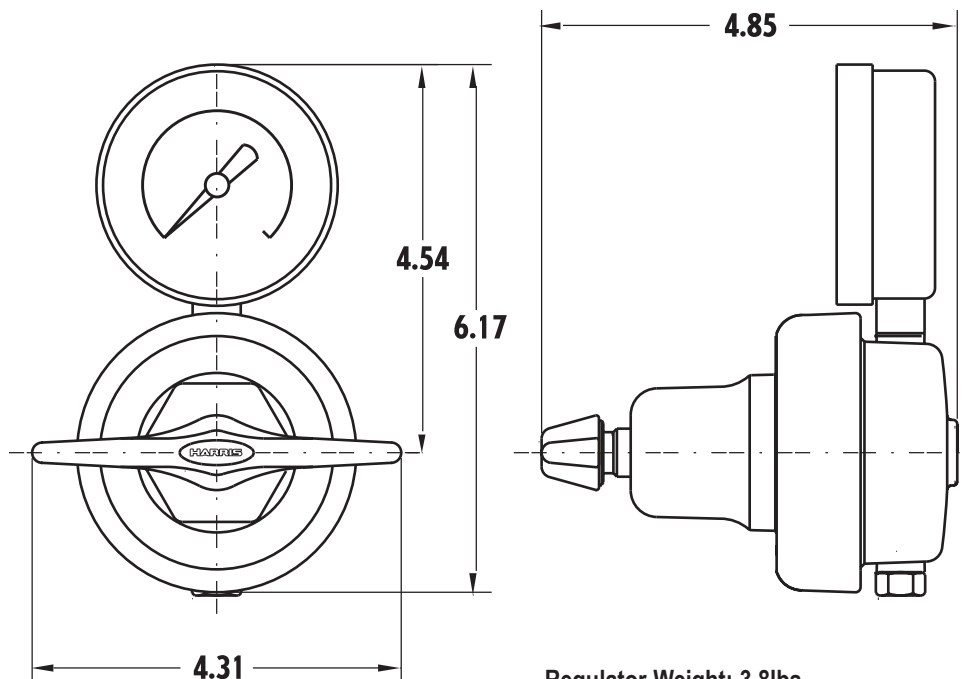
Model 447/547 Station/Pipeline Regulator

All flows based on air @ 70°F

- 447/547-200 @ 200 PSIG inlet
- - - 447/547-125 @ 200 PSIG inlet
- - - 447/547-50 @ 200 PSIG inlet
- - - 447/547-15 @ 200 PSIG inlet

Regulator Technical Data 2548

TECH DATA

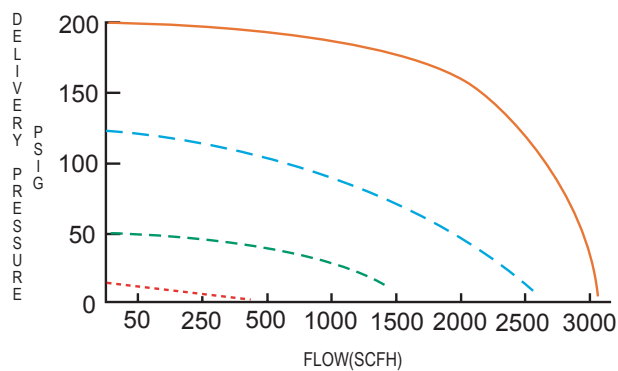


Regulator Weight: 3.8lbs.
Pressure Rise: .9 PSIG per 100 PSIG
Cv: .4

Model 2548 Pipeline Regulator - 200 PSIG Inlet

All flows based on air @ 70°F

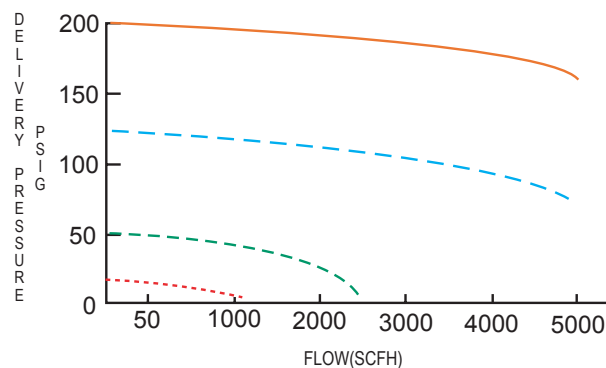
—	2548-200 @ 200 PSIG inlet
- - -	2548-125 @ 200 PSIG inlet
- - -	2548-50 @ 200 PSIG inlet
- - -	2548-15 @ 200 PSIG inlet



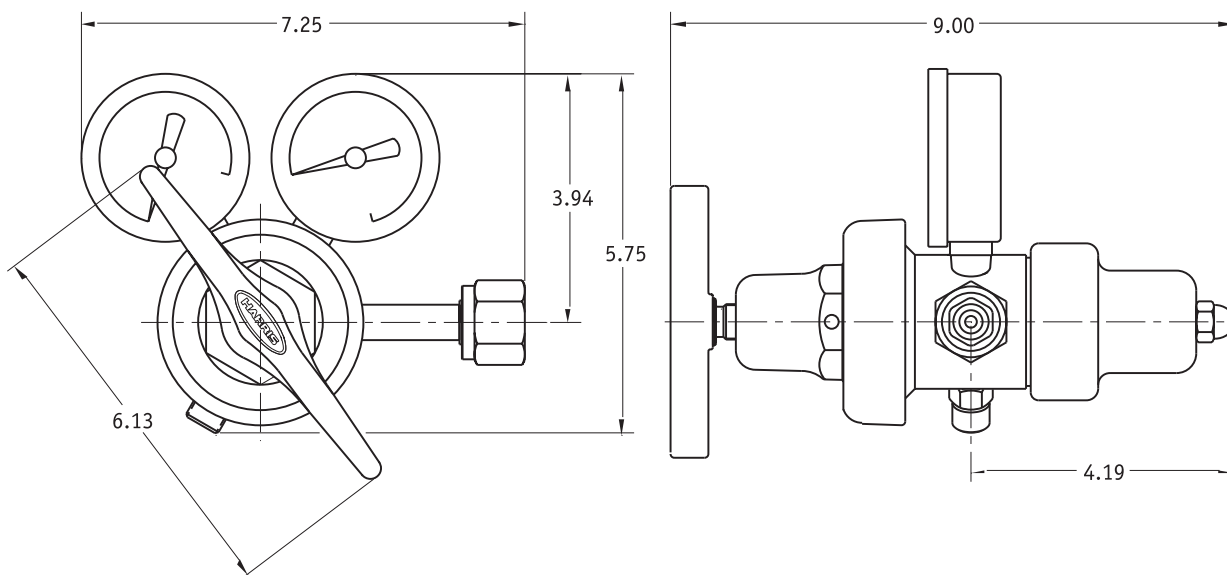
Model 2548 Pipeline Regulator - 2000 PSIG Inlet

All flows based on air @ 70°F

—	2548-200 @ 2000 PSIG inlet
- - -	2548-125 @ 2000 PSIG inlet
- - -	2548-50 @ 2000 PSIG inlet
- - -	2548-15 @ 2000 PSIG inlet



Regulator Technical Data 9200



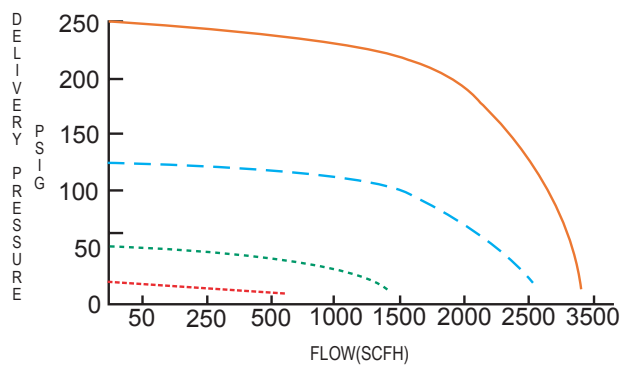
Regulator Weight: 6.8lbs.
 FOR FUEL GAS MODELS (3302210, 3302211 and 3302212)
 Pressure Rise: .05 PSIG per 100 PSIG
 Cv: .53

FOR OTHER MODELS:
 Pressure Rise: .03 PSIG per 100 PSIG
 Cv: .37

Model 9200 Two Stage Regulator - 200 PSIG Inlet

All flows based on air @ 70°F

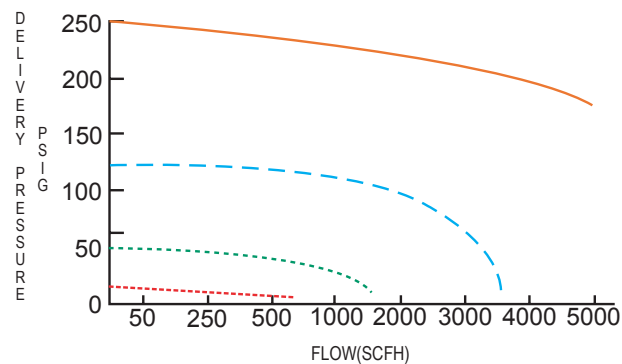
- 9200-250 @ 250 PSIG inlet
- - - 9200-125 @ 200 PSIG inlet
- · - · - 9200-50 @ 200 PSIG inlet
- · - · - 9200-15 @ 200 PSIG inlet



Model 9200 Two Stage Regulator - 2000 PSIG Inlet

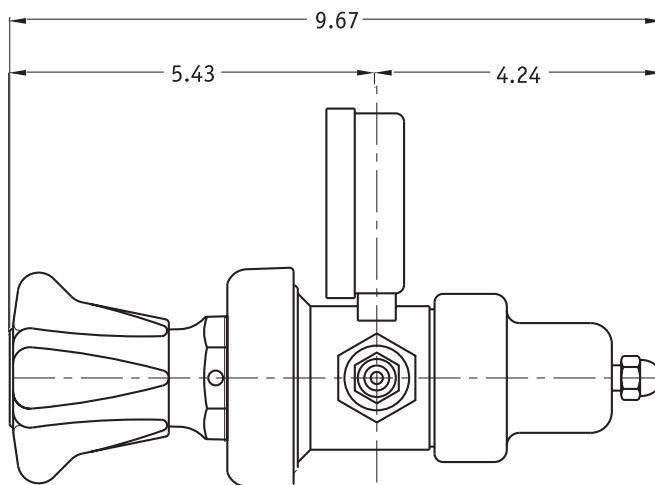
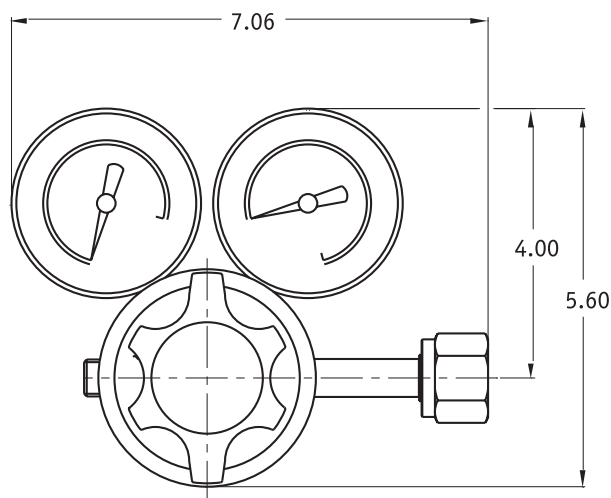
All flows based on air @ 70°F

- 2548-200 @ 2000 PSIG inlet
- - - 2548-125 @ 2000 PSIG inlet
- · - · - 2548-50 @ 2000 PSIG inlet
- · - · - 2548-15 @ 2000 PSIG inlet



Regulator Technical Data 9235

TECH DATA

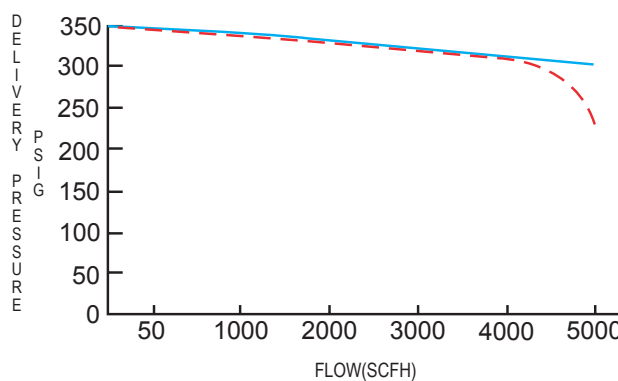


Regulator Weight: 6.9lbs.
Pressure Rise: .05 PSIG per 100 PSIG
Cv: .4

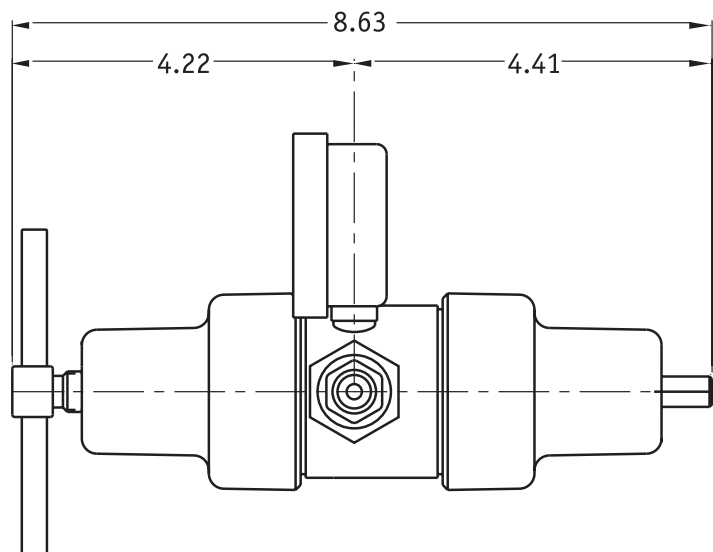
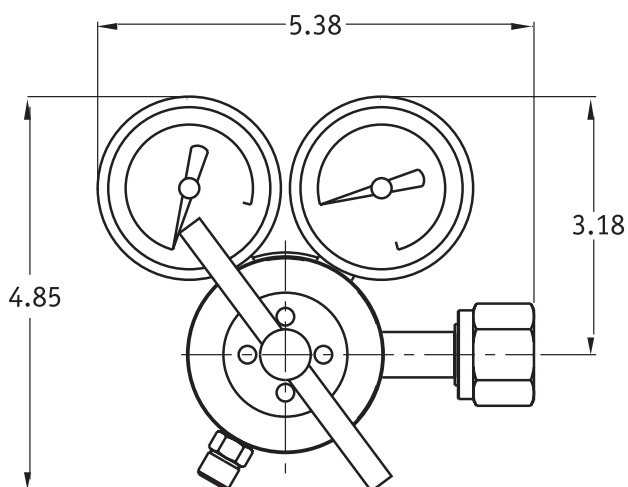
Model 9235 Two Stage Regulator

All flows based on air @ 70°F

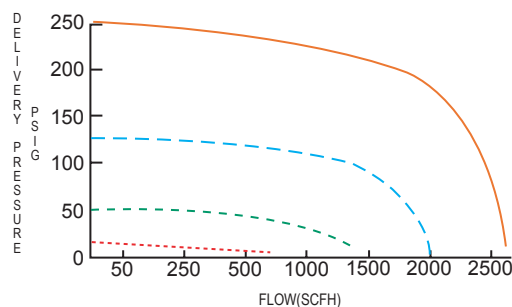
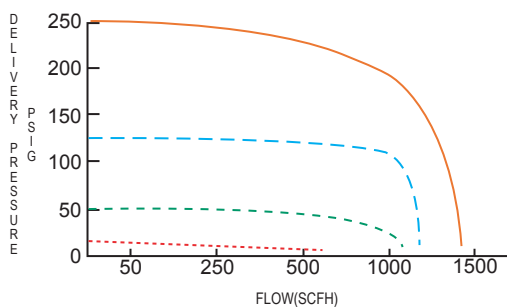
- 9235-350 @ 2000 PSIG inlet
- - - 9235-350 @ 500 PSIG inlet



Regulator Technical Data 9296



Regulator Weight: 4.8lbs.
Pressure Rise: .04 PSIG per 100 PSIG
Cv: .15



Model 9296 Two Stage Regulator

All flows based on air @ 70°F

- 9296-250 @ 250 PSIG inlet
- - - 9296-125 @ 200 PSIG inlet
- - - 9296-50 @ 200 PSIG inlet
- · · 9296-15 @ 200 PSIG inlet

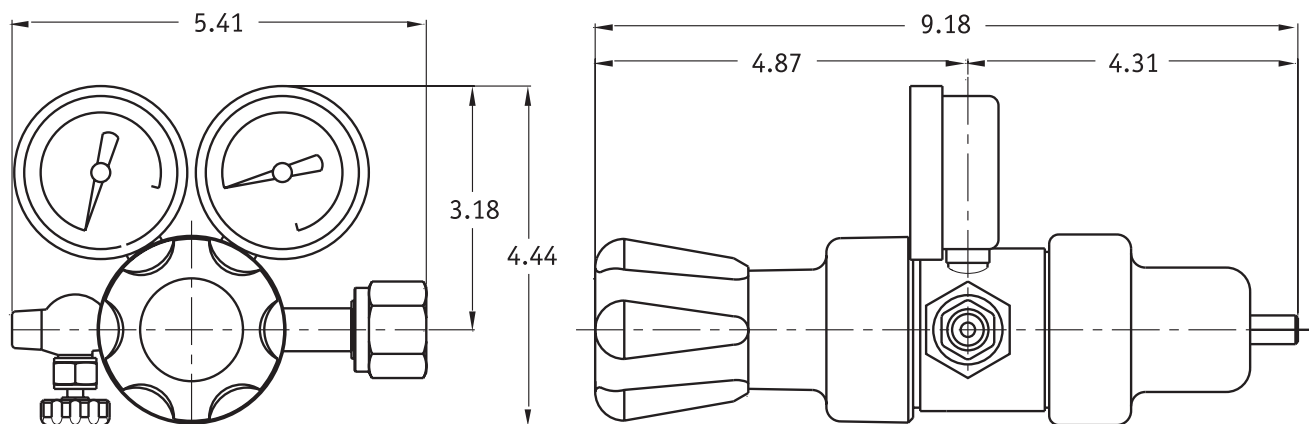
Model 9296 Two Stage Regulator

All flows based on air @ 70°F

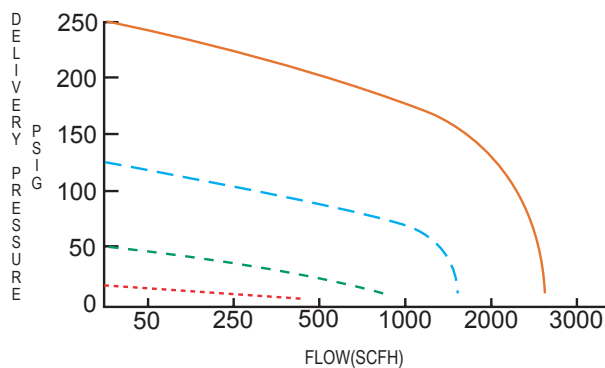
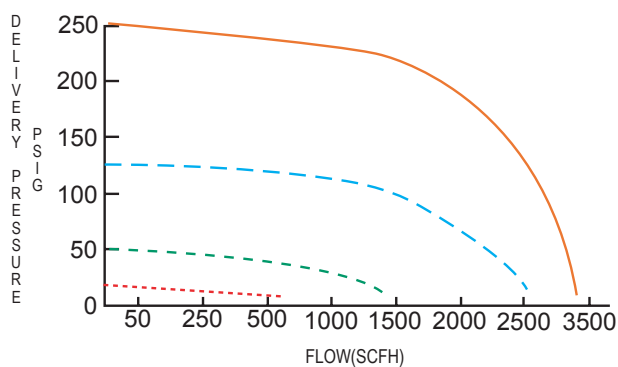
- 9296-250 @ 2000 PSIG inlet
- - - 9296-125 @ 2000 PSIG inlet
- - - 9296-50 @ 2000 PSIG inlet
- · · 9296-15 @ 2000 PSIG inlet

Regulator Technical Data 9296SS

TECH DATA



Regulator Weight: 5.4lbs.
Pressure Rise: .04 PSIG per 100 PSIG
Cv: .15



Model 9296 SS Two Stage Regulator

All flows based on air @ 70°F

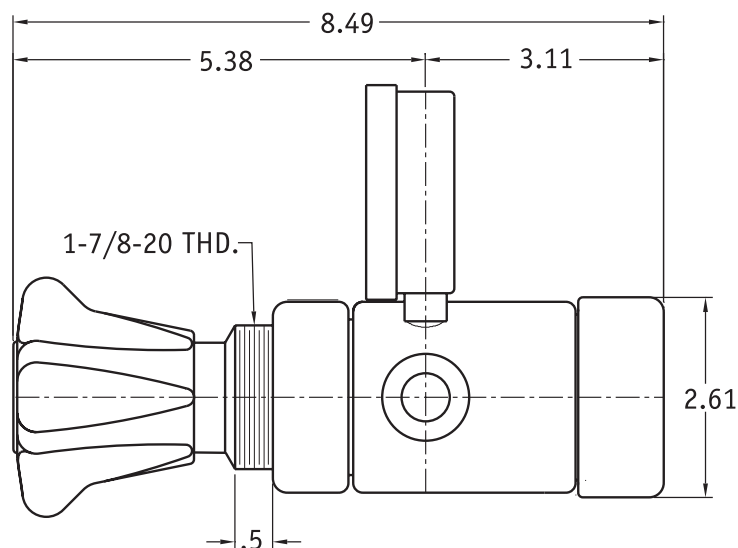
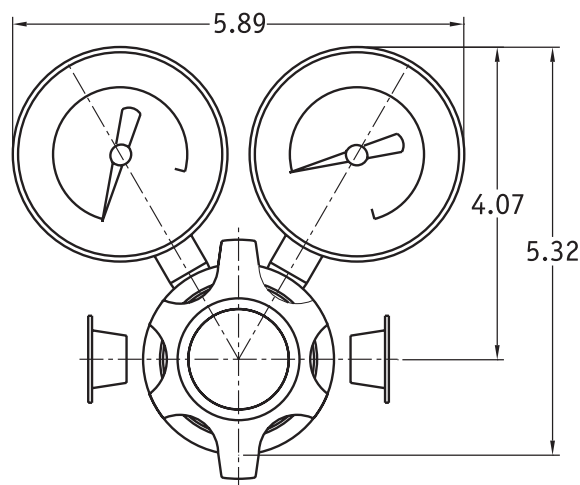
- 9296 SS-250 @ 250 PSIG inlet
- - - 9296 SS-125 @ 200 PSIG inlet
- - - 9296 SS-50 @ 200 PSIG inlet
- - - 9296 SS-15 @ 200 PSIG inlet

Model 9296 SS Two Stage Regulator

All flows based on air @ 70°F

- 9296 SS-250 @ 2000 PSIG inlet
- - - 9296 SS-125 @ 2000 PSIG inlet
- - - 9296 SS-50 @ 2000 PSIG inlet
- - - 9296 SS-15 @ 2000 PSIG inlet

Regulator Technical Data 750



Weight: 8.5 lbs

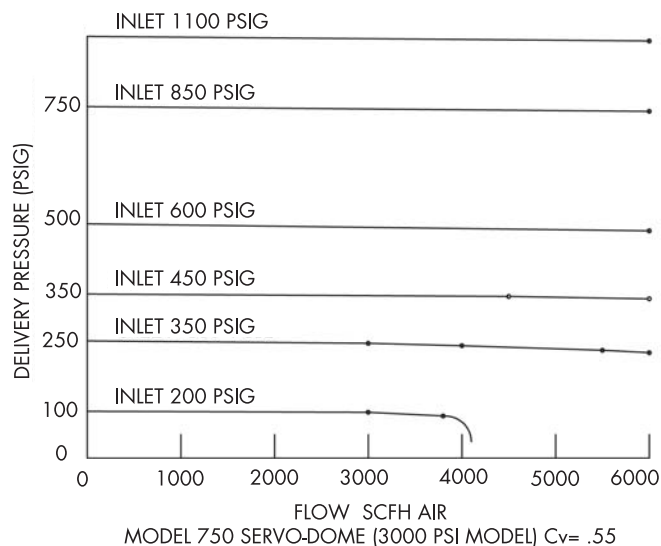
C_v: .4 on 5500 psi inlet models

C_v: .55 on 3000 psi inlet models

Pressure Regulation:

3 PSIG/100 PSIG on 5500 psi inlet models

5 PSIG/100 PSIG on 3000 psi inlet models



Victor® and Medalist® are registered trademarks owned by Victor Equipment Company, a Thermadyne Company.

MAPP® and AIRCO® are registered trademarks of The BOC Group, Inc.
SMITH EQUIPMENT® is a registered trademark of Illinois Tool Works, Inc.

OXWELD® and PUROX® are registered trademarks of ESAB AB.
MAPP® is a registered trademark of The BOC Group, Inc.

The Brand You Know



BATTERY SERVICE EQUIPMENT and PORTABLE POWER SUPPLY



THE

INFERNO

PROPANE TORCH

**Making home, farm, industrial
and construction work easier.**

- Repairing road surfaces.
- Removing paint.
- Burning brush, weeds and stumps.
- Melting snow and ice.
- Roofing, melts tar and asphalt.

FEATURES

- 500,000 BTU Output
- Excess flow safety valve
- Brass valve for flame adjustment
- 10' LP Gas hose
- Flint striker



A Lincoln Electric Company

PART NO.: KH825-01





A Lincoln Electric Company

Harris Calorific, Inc.
A Lincoln Electric Company
2345 Murphy Blvd.,
Gainesville, GA 30504
Customer Service: 1-800-241-0804
FAX : 1-800-840-8684
www.harriscalorific.com



ISO 9001
Certificate Number 30463

092005