GAS INNOVATIONS™

Cutting & Heating Equipment

Cutting Tips
Heating Equipment
Flashback Arrestors
Regulators

MACH 1™
Cutting Tips

About Us

GAS INNOVATIONS™

Gas Innovations was founded in 2002 and has grown to become a leading supplier of PROPYLENE, KOBELCO welding consumables, high-purity hydrocarbons, and specialty gases, along with a complete line of cutting and heating equipment.

- KOBELCO flux-cored welding wire for carbon and stainless steel, flux-core technical support, training programs & welding engineering solutions.
- World wide supplier of PROPYLENE cutting Fuel
  Fuel Gas Safety & Training Programs

- MACH1™ Cutting & Heating Equipment
- High Purity Hydrocarbons
  Carbon Monoxide, Hydrogen Chloride, LNG & CNG
  UL Classified Refrigerants in cylinders or bulk
  Tube Trailers, ISO containers leasing programs

GAS INNOVATIONS™
High Purity Hydrocarbons

- Worthington cylinders low and high pressure.

MACH1™ Cutting Tips PROPYLENE KOBELCO WORTHINGTON CYLINDERS A Worthington Industries Company

MACH1™
Cutting Tips

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MACH1™ Cutting Tips

FS
Fine Spline

Performance Rating

FSH
Fine Spline High Speed

Performance Rating

FSHS
Fine Spline High Speed Stainless Insert

Performance Rating

Mach 1 Ripper
Stainless Insert Bevel & Scrap Cutting

Tired of Arc Gouging?

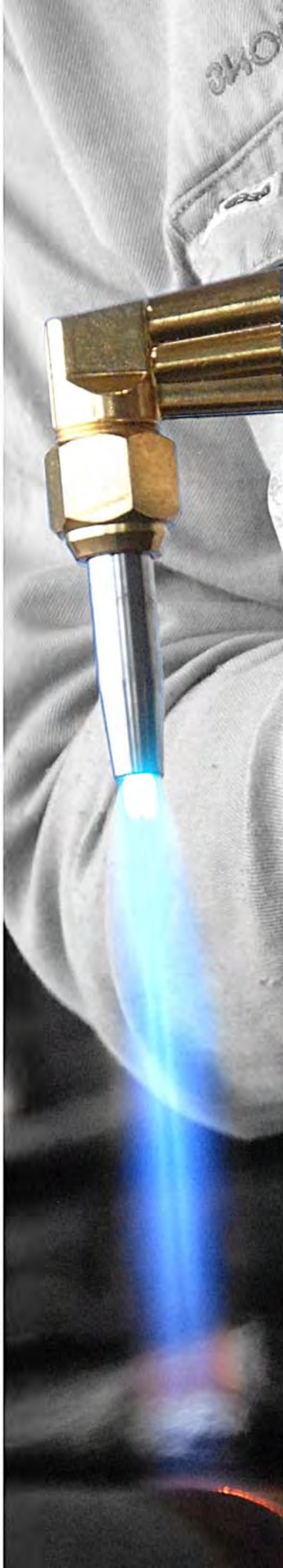
Try our

MACH1™ Multi Purpose Gouger

No smoke & very little noise

Performs as three different gougers simply by changing oxygen pressure

1. 50-65 psi Easy to control/slow metal removal
2. 65-80 psi Rapid, yet still controlled, metal removal
3. 90-110 psi Aggressive metal removal



Airco Style Tips

AFS	Fine Spline	0000-9
AFSH	Fine Spline High Speed	0-6
AFSHS	Fine Spline High Speed Stainless Insert	0-7
AHT	Heating Tip	
AGFB	Bent Gouger	2,4,6,8
APRB	Rivet Bulkhead Gouger	2,4,6

Harris Style Tips

HFS	Fine Spline	000-9
HFSH	Fine Spline High Speed	000-4
HFSHS	Fine Spline High Speed Stainless Insert	0-8
H-SS-RIP	Mach 1 Ripper Bevel & Scrap Cutting	4,6,8,10
HHT	Heating Tip	
HGFB	Bent Gouger	2,4,6,8
HPRB	Rivet Bulkhead Gouger	2,3,4

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MACH1™ Cutting Tips

Koike Style Tips

KFS	Fine Spline	**0-4**
KFSH	Fine Spline High Speed	**00-7**
KFSHS	Fine Spline High Speed Stainless Insert	**00-8**

Oxweld Style Tips

OFS	Fine Spline	**0000-9**
OFSH	Fine Spline High Speed	**0000-4**
OFSHS	Fine Spline High Speed Stainless Insert	**0-7**
O-SS-RIP	Mach 1 Ripper Bevel & Scrap Cutting	**2,4,6,8,10**
OHT	Heating Tip	
OGFB	Bent Gouger	**2-4**

Purox Style Tips

PFS	Fine Spline	**000-7**
PHT	Heating Tip	
PGFB	Bent Gouger	**2,4,6**

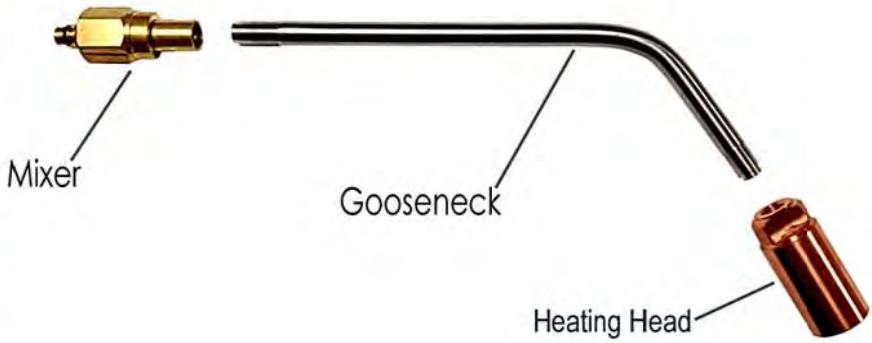
Smith Style Tips

	SFS	Fine Spline	**000-9**
	MCFS	Fine Spline	**000-3**
	SFSH	Fine Spline High Speed	**000-4**
	SFSHS	Fine Spline High Speed Stainless Insert	**0-7**
	S-SS-RIP	Mach 1 Ripper Bevel & Scrap Cutting	**4,6,8,10**
	SHT	Heating Tip	
	SGFB	Bent Gouger	**2,4,6,8**
	SPRB	Rivet Bulkhead Gouger	**1-5**

Victor Style Tips

	2VFS	Fine Spline	**0000-9**
	2VFSH	Fine Spline High Speed	**000-7**
	2VFSHS	Fine Spline High Speed Stainless Insert	**00-8**
	V-SS-RIP	Mach 1 Ripper Bevel & Scrap Cutting	**4,6,8,10**
	VHT	Heating Tip	
	VGFB	Bent Gouger	**2,4,6,8**
	VPRB	Rivet Bulkhead Gouger	**1-5**
	3VFS	Fine Spline High Speed 3 Series	**000-4**
	3VFSH	Fine Spline High Speed 3 Series	**000-4**
	3VHT	Heating Tip 3 Series	
	3VGFB	Bent Gouger 3 Series	**000-4**

Heating Torch Assembly



Head Size	Fuel Gas PSIG	Oxygen PSIG	Fuel Gas Consumption lbs./Hr	Oxygen Consumption CFH	BTU Per Hour	Victor Conversion Type 55 / MFA	
HD-1	15-20	60-80	8-11	100-180	250,000	#55	8,10
HD-2	15-20	60-70	11-17	200-300	375,000	#10	15
HD-3	15-30	60-100	17-22	350-460	500,000	#15	
HD-4	20-35	90-120	28-39	600-800	875,000	#20	
HD-5	30-50	100-150	44-55	900-1150	1,250,000		

Safety First

For continuous heating applications always use 3/8" Hose and Gas Innovations High Flow Flashback Arrestors when operating HD Heating Heads.

# of cylinders required to run HD Heating Heads

Head Size	# of 105 lb cylinders required	# of 435 lb cylinders required
HD-1	2	
HD-2	3	
HD-3	4	
HD-4	6	1
HD-5	*N/R	2

* Not Recommended

Complete Heating Assembly

V - Victor A - Airco H - Harris O - Oxweld P - Purox S - Smith

Example: Victor 18" Gooseneck HD-1 Heating Assembly

V	18-1	Mixer, 18" SS Gooseneck, HD-1 Heating Head
	18-2	Mixer, 18" SS Gooseneck, HD-2 Heating Head
	24-3	Mixer, 24" SS Gooseneck, HD-3 Heating Head
	24-4	Mixer, 24" SS Gooseneck, HD-4 Heating Head
	36-5	Mixer, 36" SS Gooseneck, HD-5 Heating Head

Heavy Duty Heating Heads

HD-1	HD Heating Head
HD-2	HD Heating Head
HD-3	HD Heating Head
HD-4	HD Heating Head
HD-5	HD Heating Head
Spot 2	Spot Heating Head
Spot 3	Spot Heating Head

Stainless Steel Goosenecks

GN-12	Bent 12" Stainless Steel Gooseneck
GN-18	Bent 18" Stainless Steel Gooseneck
GN-24	Bent 24" Stainless Steel Gooseneck
GN-36	Bent 36" Stainless Steel Gooseneck

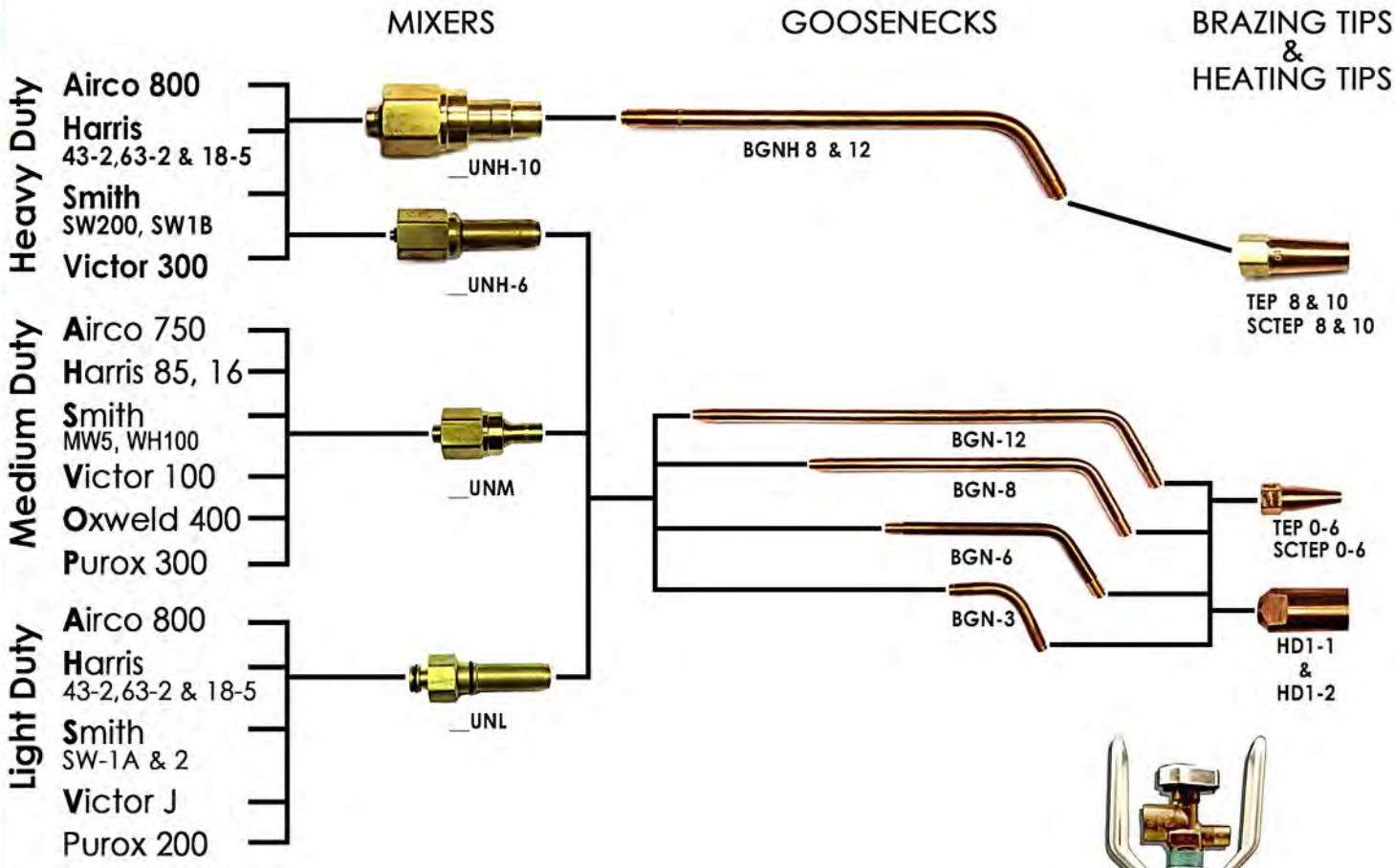
Mixers for Goosenecks

AMX	Airco Mixer Style 800
HMX	Harris Mixer 43-2, 63-2 & 18-3
OMX-17	Oxweld Mixer Series 17
PMX	Purox/Oxweld W300 & W400
SMX	Smith Mixer SMIA - SW2 & SW10
VMX	Victor Mixer Series 300

Medium Duty Heating Heads

HD-1-1	Medium Duty Heating Head
HD-1-2	Medium Duty Heating Head

Gas Innovations has created the ability to purchase individual components shown below (mixers, goosenecks, & tips) which reduces inventory making it more cost efficient. This equipment will replace your acetylene brazing application when used with Propylene.



SCTEP
Single Orifice Tip

TEP
Multi Orifice Tip

Tip #	Drill Size	Fuel Gas PSIG	Fuel Gas Consumption CFH	Oxygen PSIG
00	76	3-5	4-9	3-6
0	70	3-5	6-12	3-6
1	65	3-6	9-18	4-8
2	60	3-6	10-20	5-10
3	56	4-8	12-24	8-15
4	53	5-10	20-40	10-25
5	49	6-12	30-75	15-30
6	43	7-14	60-120	30-40
7	38	8-15	90-180	30-40
8	30	12-24	160-320	40-70
10	25	32-44	200-400	50-80
HD1-1	200,000 BTU	5-10	70-100	40-60
HD1-2	355,000 BTU	10-15	100-150	50-70

When converting from Acetylene to Propylene or Propane increase your brazing tip size by one.

Example: Acetylene TEP 0 = Propylene TEP 1

Brazing Mixer

A-UNH-10	Airco 800
A-UNH-6	Airco 800
A-UNM	Airco 750
A-UNL	Airco 650
H-UNH-10	Harris 43-2, 63-2, 18-3
H-UNH-6	Harris 43-2, 63-2, 18-3
H-UNM	Harris 85
H-UNL	Harris 16, 50-7 & 50-7
S-UNH-10	Smith SWAI, SW-2, SW-10
S-UNH-6	Smith SWAI, SW-2, SW-10
SUNM	Smith MW-S & PW-1
SUNL	Smith AW-1 & AW-10
V-UNH-10	Victor 300
V-UNH-6	Victor 300
V-UNM	Victor 100
V-UNL	Victor "J"
O-17-UNH-10	Oxweld W-17
O-17-UNH-6	Oxweld W-17
O-17-UNH-6	Oxweld W-17

Brazing Goosenecks

BGNH-8	8" Gooseneck (Heavy Duty)
BGNH-12	12" Gooseneck (Heavy Duty)
BGN-3	3" Gooseneck
BGN-6	6" Gooseneck
BGN-8	8" Gooseneck
BGN-12	12" Gooseneck

Brazing Tips

TEP 8	Heavy Duty for BGNH Gooseneck
TEP 10	Heavy Duty for BGNH Gooseneck
TEP 00-7	Brazing Tip for BGN Gooseneck
SCTEP 00-10	Brazing Tip for BGN Gooseneck

GAS INNOVATIONS Flashback Arrestors provide protection against dangerous reverse gas flow and flashbacks in accordance with EN 730 / ISO 5175-1.
100% tested, use Viton seals and have higher flow rates than other flashback arrestors.

Built in temperature sensitive cut-off valve extinguishes sustained flashbacks long before the internal temperature of the arrestor reaches a dangerous level

Spring loaded non-return valve prevents slow or sudden reverse gas flow forming explosive mixtures in the gas supply

85-20 GIW8520PPL
85-30 GIW8530PPL

- High flow applications from bulk tanks (101 PSI)
- 3/4" NPT (85-20) or 1" (85-30)
- Viton (EDPM) seals for Fuel gases
- Temperature Sensitive - Thermal Cut-off Valve
- ISO 5175 Certified and conforms to OSHA, NFPA, ANSI, Z49 and UL Approved for Propylene

85-10 GIW8510PHR

- High flow Heating & Scrap Cutting Applications
- "B" Connection - Regulator (101 PSI) flow rate
- Viton (EDPM) seals for Fuel gases
- Temperature Sensitive - Thermal Cut-off Valve
- ISO 5175 Certified and conforms to OSHA, NFPA, ANSI, Z49 and UL Approved for Propylene

R53N GIW53PR

- Regulator (87 PSI) flow rate
- "B" Connection - Regulator mount flow rate
- Viton (EDPM) seals for Fuel gases
- Temperature Sensitive - Thermal Cut-off Valve
- ISO 5175 Certified and conforms to OSHA, NFPA, ANSI, Z49 and UL Approved for Propylene

VSR-461-510

Heavy Duty Fuel Gas

Stainless Steel Diaphragm
Mechanical Seat
CGA 510
2 1/2" Gauges

VSR-261-510

Medium Duty Fuel Gas

Reinforced Neoprene Diaphragm
Mechanical Seat
CGA 510
2" Gauges

VSR-450-540

Heavy Duty Oxygen

Stainless Steel Diaphragm
Mechanical Seat
CGA 540
2 1/2" Gauges

VSR-250-540

Medium Duty Oxygen

Reinforced Neoprene Diaphragm
Mechanical Seat
CGA 540
2" Gauges

"T" Grade Hose

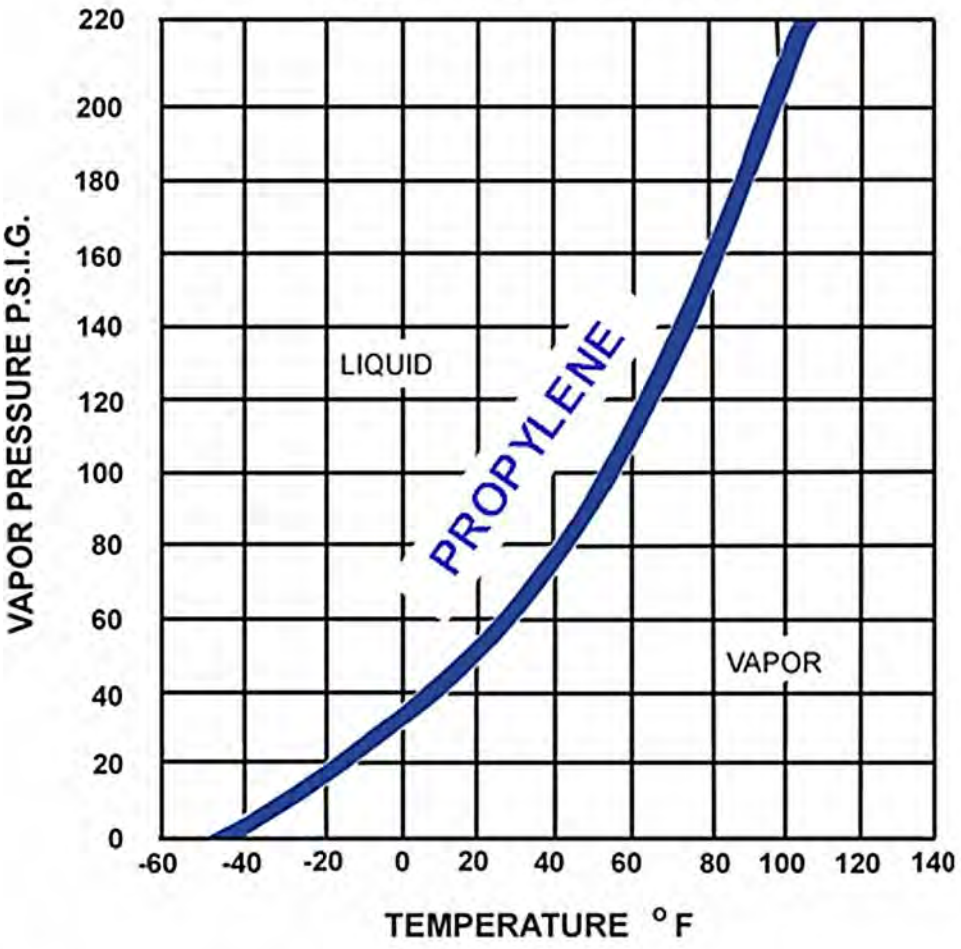
Medium Duty

1/4" 15 Feet Twin Hose

Heavy Duty

3/8" 15 Feet Twin Hose

Propylene Vapor Pressure Curve



Vaporization Rate of Propylene

Cubic Feet Per Hour with 60% full cylinder

Cylinder Size	*Temperature F*				
	-5	+10	+20	+40	+60
27 lb.	8	16	21	32	42
63 lb.	15	29	39	58	78
105 lb.	20	40	53	80	106
435 lb.	44	89	119	178	238

40% Full - Multiply 0.8 **20% Full - Multiply by 0.6**

Vaporization Rate of Propylene

Cubic Feet Per Hour with 60% full tank

Bulk Tank Size	*Temperature F*				
	-5	+10	+20	+40	+60
1,000 gal	205	338	533	791	1190

40% Full - Multiply 0.8 **20% Full - Multiply by 0.6**

MACH1™ Cutting Tips

FS
HAND CUTTING CHART

Material Thickness	Tip Size	Gas P.S.I	Cutting Oxygen P.S.I	Travel Speed I.P.M
1/8-1/4	0000	3-6	30-50	21-31
3/8	000	3-6	30-50	20-29
1/2	00	6-11	30-50	17-27
5/8	00	6-11	40-50	16-23
3/4	0	6-11	40-50	15-22
7/8	1	6-11	40-50	14-21
1-1 1/2	1	6-11	40-50	13-20
2-2 1/2	2	6-11	50-60	11-14
3	3	6-11	50-60	7-14
4	4	6-11	50-60	6-11
5	5	6-11	60-70	6-11
6	5	6-11	60-70	4-9
7	6	11-16	60-70	4-9
8	6	11-16	60-70	3-7
9	7	11-16	60-70	3-7
10	8	11-16	60-70	3-6
12	9	11-16	60-70	2-5
14	10	11-16	60-80	2-3
Gouging Tip	2,4,6,8	15-20	50-110	

MACH1™ Cutting Tips

FSH
HIGH SPEED CUTTING CHART

Material Thickness	Tip Size	Gas P.S.I	Cutting Oxygen P.S.I	Travel Speed I.P.M	Kerf Width
1/4	4/0	4-6	60-70	23-33	.06
3/8	000	4-6	60-70	23-33	.07
1/2	00	4-6	60-70	21-31	.07
3/4	0	5-9	60-70	20-29	.08
1	1	5-9	60-70	18-28	.08
1 1/2	2	5-9	60-70	13-20	.09
2	2	5-9	60-70	12-18	.10
2 1/2	3	6-11	70-80	10-16	.11
3	3	6-11	70-80	8-14	.11
4	4	8-12	75-100	9-15	.13

Not for use with Acetylene
www.gasinnovations.com
281-471-2200

MACH1™ Cutting Tips

FSHS
HIGH SPEED CUTTING CHART
STAINLESS INSERT

Material Thickness	Tip Size	Gas P.S.I	Cutting Oxygen P.S.I	Travel Speed I.P.M	Kerf Width
1/4	0	6-8	60-85	29-33	.04-.05
3/8	0	8-10	60-85	29-33	.04-.05
1/2	1	9-10	60-85	25-31	.05
3/4	2	9-10	60-85	29-18	.06-.07
1	2	9-10	60-85	29-18	.06-.07
1 1/2	3	9-10	60-85	13-20	.08
2	4	9-11	60-85	13-18	.10
2 1/2	5	9-11	60-85	8-15	.11-.13
4-5	6	9-11	80-95	6-14	.13-.14
6-8	7	9-11	110-120	5-7.5	.14-.18
10+	8	9-12	120	3-4	.20-.24

Suggested Pressures

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MACH1™ Cutting Tips

Mach1 Ripper

Material Thickness	Tip Size	Gas P.S.I	Cutting Oxygen P.S.I
2-4	4	6-8	65-75
6-8	6	9-11	75-85
8-10	8	12-15	85-90
12-15	10	16-18	90-110

Suggested Pressures

HEATING HEAD CHART

HD Size	Gas P.S.I	Oxygen P.S.I	Gas Consumption lbs./Hr	Oxygen Consumption lbs./Hr	BTU PER HOUR
HD-1	15-20	60-80	8-11	100-180	250,000
HD-2	15-20	60-80	11-17	200-300	375,000
HD-3	15-20	60-100	17-22	350-460	500,000
HD-4	20-35	90-120	28-39	600-800	875,000
HD-5	30-50	100-150	44-55	900-1150	1,250,000

Suggested Pressures

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MACH1™ Cutting Tips

Take the *Mach 1* Test...

See how much the *Mach 1* tips can save you.

Example: 1" Material	Conventional Tip	MACH1™ Cutting Tips
Production Travel Speed	14 inch/min.	22 inch/min.
Shop Labor Rate	$35/hr.	$35/hr.
Metal Cut in 8 hour Shift	560 ft.	880 ft.
Cost to Cut 1 foot	$0.50	$0.31
Metal Cut over 1 Month	11,200 ft.	17,600 ft.

Increased 6,400 ft. of production @ $0.50/ft. = $3,200 Savings

***Mach1 Tips* can save you $1,000's**

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