ACETYLENE

HAND/MACHINE CUTTING

6290 Single Piece Cutting Tips
Medium preheat for clean surfaces

6290-S Single Piece Cutting Tips
6290-AC Two Piece Cutting Tips
Heavy preheat for rusty or scaled surfaces

6290 & 6290-S TIPS FOR OXY-ACETYLENE

PLATE THICKNESS INCHES	6290 TIP SIZE	6290-S TIP SIZE	OXYGEN PRESSURE PSIG	ACETYLENE PRESSURE PSIG	CUTTING ORIFICE DRILL SIZES
Light gauge to 3/16	000	-	15-20	5-15	#68
3/16-3/8	00	-	20-25	5-15	#64
3/8-5/8	0	-	35-40	5-15	#60
5/8-1	1	1S	35-40	5-15	#56
1-2	2	2S	40-45	5-15	#52
2-3	3	3S	45-50	5-15	#48
3-6	4*	4S**	50-75	10-15	#42
6-8	-	5S**	65-80	10-15	#35
8-12	-	6S**	70-90	10-15	#30

6290-AC TIPS FOR OXY-ACETYLENE

PLATE THICKNESS INCHES	6290-AC TIP SIZE	OXYGEN PRESSURE PSIG	ACETYLENE PRESSURE PSIG	CUTTING ORIFICE DRILL SIZES
3/16-3/8	00AC	15-30	5-15	#64
3/8-5/8	0AC	20-35	5-15	#60
5/8-1	1AC	30-50	5-15	#56
1-2	2AC	40-65	5-15	#53
2-4	3AC	40-65	5-15	#52
4-7	4AC**	50-80	5-15	#42
7-10	5AC**	65-80	5-15	#35
10-12	6AC**	70-95	5-15	#31

** to provide required gas flow, use 3/8" I.D. hose for size 4 and larger.
Cleaning: Use Harris tip cleaner C-9 (P/N 9000156) for single piece tips.
E-9 (P/N 9000160) for two piece tips.

Additional copies are available at www.harrisproductsgroup.com

PROPANE/NATURAL GAS

HAND CUTTING

6290-NFF Cutting Tips
Heavy preheat for rusty or scaled surfaces

6290-NX Cutting Tips
Medium preheat for clean surfaces

6290-NX TIPS FOR ALTERNATE FUEL

PLATE THICKNESS INCHES	6290-NX TIP SIZE	OXYGEN PRESSURE PSIG	FUEL GAS LOW PRESSURE	FUEL GAS EQUAL PRESSURE	CUTTING ORIFICE DRILL SIZES
Light gauge to 3/16	000NX	15-30	4 oz. to 2 PSIG	5-15 PSIG	#68
3/16-3/8	00NX	20-30	4 oz. to 2 PSIG	5-15 PSIG	#64
3/8-5/8	0NX	30-40	4 oz. to 2 PSIG	5-15 PSIG	#60
5/8-1	1NX	35-50	4 oz. to 2 PSIG	5-15 PSIG	#56
1-2	2NX	40-55	4 oz. to 2 PSIG	5-15 PSIG	#52
2-3	3NX	45-60	4 oz. to 2 PSIG	5-15 PSIG	#48
3-6	4NX	50-75	4 oz. to 2 PSIG	5-15 PSIG	#42
6-8	5NX	65-80	4 oz. to 2 PSIG	5-15 PSIG	#35
8-12	6NX	70-90	4 oz. to 2 PSIG	5-15 PSIG	#30

6290-NFF TIPS FOR ALTERNATE FUEL

PLATE THICKNESS INCHES	6290-NFF TIP SIZE	OXYGEN PRESSURE PSIG	FUEL GAS LOW PRESSURE	FUEL GAS EQUAL PRESSURE	CUTTING ORIFICE DRILL SIZES
Light gauge to 5/8	1NFF	20-35	4 oz. to 2 PSIG	5-15 PSIG	#56
5/8-2	2NFF	30-55	4 oz. to 2 PSIG	5-15 PSIG	#53
2-4	3NFF	45-65	4 oz. to 2 PSIG	5-15 PSIG	#47
4-6	4NFF	55-75	4 oz. to 2 PSIG	5-15 PSIG	#42
6-8	5NFF	60-80	4 oz. to 2 PSIG	5-15 PSIG	#35
8-10	6NFF	80-90	4 oz. to 2 PSIG	5-15 PSIG	#31
10-12	7NFF	80-90	4 oz. to 2 PSIG	5-15 PSIG	#29

** to provide required gas flow, use 3/8" I.D. hose for size 4 and larger.
Cleaning: Use Harris tip cleaner E-9 (P/N 9000160) for two piece tips.

Additional copies are available at www.harrisproductsgroup.com

PROPYLENE/MAPP®

HAND CUTTING

6290-NXP Cutting Tips
6290-NXM Cutting Tips
Medium preheat for clean surfaces

6290-NXP TIPS FOR PROPYLENE

PLATE THICKNESS INCHES	6290-NXP TIP SIZE	OXYGEN PRESSURE PSIG	FUEL GAS LOW PRESSURE	FUEL GAS EQUAL PRESSURE	CUTTING ORIFICE DRILL SIZES
Light gauge to 3/16	000NXP	15-30	4 oz. to 2 PSIG	5-15 PSIG	#68
3/16-3/8	00NXP	20-30	4 oz. to 2 PSIG	5-15 PSIG	#64
3/8-5/8	0NXP	30-40	4 oz. to 2 PSIG	5-15 PSIG	#60
5/8-1	1NXP	35-50	4 oz. to 2 PSIG	5-15 PSIG	#56
1-2	2NXP	40-55	4 oz. to 2 PSIG	5-15 PSIG	#52
2-3	3NXP	45-60	4 oz. to 2 PSIG	5-15 PSIG	#48
3-6	4NXP	50-75	4 oz. to 2 PSIG	5-15 PSIG	#42
6-8	5NXP	65-80	4 oz. to 2 PSIG	5-15 PSIG	#35
8-12	6NXP	70-90	4 oz. to 2 PSIG	5-15 PSIG	#30

6290-NXM TIPS FOR MAPP® GAS

PLATE THICKNESS INCHES	6290-NXM TIP SIZE	OXYGEN PRESSURE PSIG	FUEL GAS LOW PRESSURE	FUEL GAS EQUAL PRESSURE	CUTTING ORIFICE DRILL SIZES
Light gauge to 3/16	000NXM	15-30	4 oz. to 2 PSIG	5-15 PSIG	#68
3/16-3/8	00NXM	20-30	4 oz. to 2 PSIG	5-15 PSIG	#64
3/8-5/8	0NXM	30-40	4 oz. to 2 PSIG	5-15 PSIG	#60
5/8-1	1NXM	35-50	4 oz. to 2 PSIG	5-15 PSIG	#56
1-2	2NXM	40-55	4 oz. to 2 PSIG	5-15 PSIG	#52
2-3	3NXM	45-60	4 oz. to 2 PSIG	5-15 PSIG	#48
3-6	4NXM	50-75	4 oz. to 2 PSIG	5-15 PSIG	#42
6-8	5NXM	65-80	4 oz. to 2 PSIG	5-15 PSIG	#35
8-12	6 NXM	70-90	4 oz. to 2 PSIG	5-15 PSIG	#30

** to provide required gas flow, use 3/8" I.D. hose for size 4 and larger.
Cleaning: Use Harris tip cleaner E-9 (P/N 9000160) for two piece tips.

Additional copies are available at www.harrisproductsgroup.com

PROPANE/NATURAL GAS

MACHINE CUTTING

6290-VVC Cutting Tips
6290-VVCU Cutting Tips
6290-VVCU & NH Cutting Tips are unplated

6290-VVC & VVCU TIPS FOR PROPANE/NATURAL GAS

PLATE THICKNESS INCHES	6290 TIP SIZE	CUTTING SPEED IN/MIN.	CUTTING OXYGEN PSIG	PREHEAT OXYGEN PRESSURE HIGH/LOW	FUEL GAS PRESSURE PSIG	WIDTH KERF INCHES	CUTTING ORIFICE DRILL SIZE
3/16	5/0 VVC & VVCU	20-24	40	15/8	4 OZ.-2 PSI	.05	#75
1/4	4/0 VVC & VVCU	20-22	50	15/10	4 OZ.-2 PSI	.06	#68
3/8	3/0 VVC & VVCU	18-22	75	35/10	4 OZ.-2 PSI	.07	#64
1/2	2/0 VVC & VVCU	18-20	75	35/10	4 OZ.-2 PSI	.07	#62
3/4	0 VVC & VVCU	15-18	90	35/10	4 OZ.-2 PSI	.08	#60
1 1/4	01/2 VVC & VVCU	14-16	100	35/12	4 OZ.-2 PSI	.08	#58
2	1 VVC & VVCU	13-15	100	35/12	4 OZ.-2 PSI	.09	#56
3	1 1/2 VVC & VVCU	9-12	100	35/12	4 OZ.-2 PSI	.11	#54
4	2 VVC & VVCU	7-9	100	35/12	4 OZ.-2 PSI	.12	#53
5	2 1/2 VVC & VVCU	6-8	100	35/12	4 OZ.-2 PSI	.13	#51
6	3 VVC & VVCU	5-7	100	40/12	4 OZ.-2 PSI	.14	#49
8	4 VVC & VVCU	5-7	100	40/12	4 OZ.-2 PSI	.16	#45
9	5 VVC & VVCU	4-6	90	40/-	4 OZ.-2 PSI	.20	#41
10	5 1/2 VVC & VVCU	4-6	90	40/-	4 OZ.-2 PSI	.25	#39
10	5NH	4-5	60	40/-	4 OZ.-2 PSI	.25	#35
11	6NH	4-5	60	40/-	4 OZ.-2 PSI	.25	#31
12	7NH	4-5	60	40/-	4 OZ.-2 PSI	.25	#29
15	8NH	3-4	60	40/-	4 OZ.-2 PSI	.30	#25

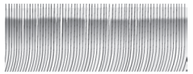
NOTE:

- Correct cutting oxygen pressure must be available at torch entry.
- Oxygen preheat pressures are for three hose torches.
- For two hose torches set same gas pressures for both high and low preheat.

Cleaning: Use Harris tip cleaner E-9 (P/N 9000160) for cleaning pre-heat holes and 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.

Additional copies are available at www.harrisproductsgroup.com

MACHINE CUTTING GUIDE



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 - 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.

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

PROPYLENE/MAPP®

MACHINE CUTTING

Series 6290-VVCP

Series 6290-VVCM

6290-VVCP TIPS FOR PROPYLENE

6290-VVCM TIPS FOR MAPP®

PLATE THICKNESS INCHES	6290 TIP SIZE	CUTTING SPEED IN/MIN.	CUTTING OXYGEN PSIG	PREHEAT OXYGEN PRESSURE HIGH/LOW	FUEL GAS PRESSURE PSIG	WIDTH KERF INCHES	CUTTING ORIFICE DRILL SIZE
1/16-3/16	5/0 VVCP & VVCM	20-24	40	12/8	4 oz. to 2 PSI	.05	#75
1/8-1/4	4/0 VVCP & VVCM	20-22	50	12/8	4 oz. to 2 PSI	.06	#68
1/4-3/8	3/0 VVCP & VVCM	18-22	75	25/8	4 oz. to 2 PSI	.07	#64
3/8-1/2	2/0 VVCP & VVCM	18-20	75	25/8	4 oz. to 2 PSI	.07	#62
1/2-3/4	0 VVCP & VVCM	15-18	90	25/8	4 oz. to 2 PSI	.08	#60
3/4-1 1/4	01/2 VVCP & VVCM	14-16	100	25/8	4 oz. to 2 PSI	.08	#58
1 1/4-2	1 VVCP & VVCM	13-15	100	25/10	4 oz. to 2 PSI	.09	#56
2-3	1 1/2 VVCP & VVCM	9-12	100	25/10	4 oz. to 2 PSI	.11	#54
3-4	2 VVCP & VVCM	7-9	100	25/10	4 oz. to 2 PSI	.12	#53
4-5	2 1/2 VVCP & VVCM	6-8	100	30/10	4 oz. to 2 PSI	.13	#51
5-6	3 VVCP & VVCM	5-7	100	30/10	4 oz. to 2 PSI	.14	#49
6-8	4 VVCP & VVCM	5-7	100	30/10	4 oz. to 2 PSI	.16	#45
8-9	5 VVCP & VVCM	4-6	90	30/10	4 oz. to 2 PSI	.20	#41

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For additional gas flow information refer to our website at www.harrisproductsgroup.com and our equipment catalog.

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TIPS ON CUTTING

A LINCOLN ELECTRIC COMPANY

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