

LINCOLN ELECTRIC

ADVANCED PIERCING TECHNOLOGY

ENABLES $\leq 1:1$ HOLES TO BE CUT IN HEAVIER GAUGE MATERIAL

During piercing, molten material accumulates on the surface and is very difficult to control. The size of the molten material must not constrain the cut height on the plate. When the need is for accurate, repeatable parts, secondary preprocessing to remove the molten material near the hole is required before cutting.

Lincoln Electric® designed a process that will revolutionize industrial high-definition plasma cutting productivity by helping to reduce secondary processing significantly. Our NEW FineLine® Advanced Process Controller combined with our Advanced Piercing Technology also enables piercing $\leq 1:1$ holes in heavier gauge material.

Advanced Piercing Technology helps you to have repeatable cuts, no collisions, tighter bevel angle, smooth surface, and consumable longevity. The operator can achieve the same quality as large holes, reduce pierce time by up to 35% while helping to improve productivity and extending consumable life.



CUTTING COMPARISON - 1 IN | 300A | MILD STEEL

High Definition Plasma Systems

Plasma Gas-Oxygen / Shield Gas-Air



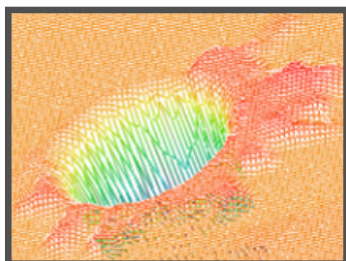
Dross is deposited on the cut edge and spatter onto the top surface during the pierce.

Surface spatter must be removed manually, often interrupting the machine before cutting the hole.



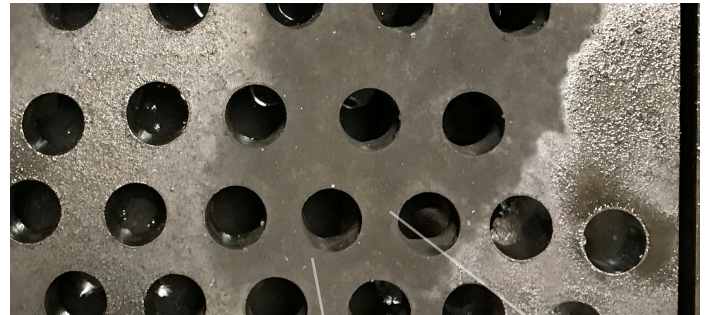
Spatter shown is typical of High Definition plasma systems.

Surface spatter volume	0.0805 in ³
Maximum spatter height	0.114 in



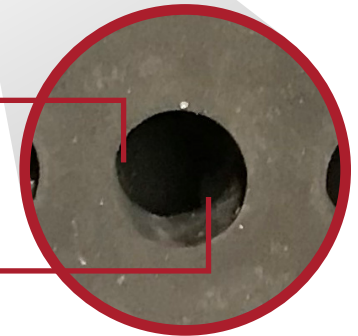
Advanced Piercing Technology

Plasma Gas-Oxygen / Shield Gas-Air



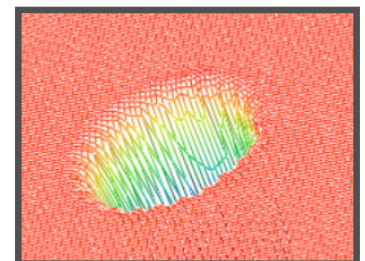
Secondary clearing gas steers the molten steel down the pierce hole without adhering to the wall and exiting.

Modifying the molten steel's surface tension can be guided with lower gas pressure to pierce the hole without cooling the arc.



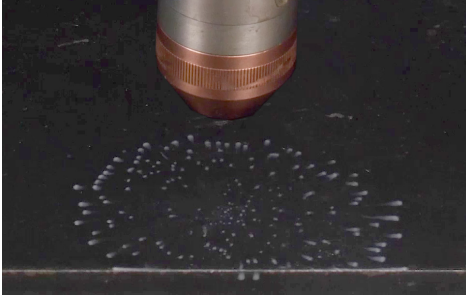
Advanced Piercing Technology can help significantly reduce secondary processing.

Surface spatter volume	0.0019 in ³
Maximum spatter height	0.017 in



HOW IT WORKS - ADVANCE PIERCING TECHNOLOGY

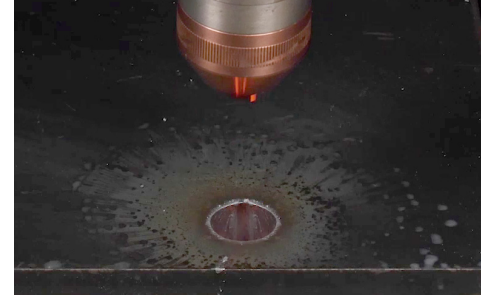
1 PIERCING ADDITIVE IS INJECTED INTO THE CLEARING GAS



2 CLEARING GAS RESTRICTS MOLTEN FLOW ON SURFACE



3 ADVANCE PIERCE IS COMPLETED



FEATURES

- Helps reduce surface dross minimizing secondary processing
- Cut $\leq 1:1$ holes in thicker material
- High repeatable hole cutting
- Allows small holes to be cut at optimal cut height
- Helps improve concentricity, cylindricity, and perpendicularity of holes
- Helps extend consumable life
- Shorter pierce times

SOLUTION COMPONENTS



FineLine System

FineLine 300HD
or
FineLine 300HD CE



Controller

FineLine Advanced
Process Controller



Additive

FineLine Premium Piercing
Additive



HD Plasma Torch

Magnum® PRO LC300M
Torch with Pierce Head
Assembly



Consumables

Magnum® PRO LC300M
Consumables with Pierce
Head Shield Cap

Test Results Disclaimer

Test results for spatter volume and height properties, dross deposited on the cut edge, concentricity, cylindricity, and perpendicularity of holes were obtained from a cut produced and tested according to prescribed standards. Actual results will vary depending on many factors, including, but not limited to: the base material or substrate being cut, the cutting procedure and cutting process, and the unique conditions present in the workplace or cutting environment. Users and employers have the sole responsibility for and control over workplace conditions, including how work is performed and the safety measures taken. Always read and follow applicable OSHA regulations as well as all information on product labeling and safety data sheets when using Lincoln Electric products. Safety data sheets for Lincoln Electric products can be found at <http://www.lincolnelectric.com/en-us/support/msds/Pages/sds-search.aspx>.

Customer Assistance Policy

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to the best of their ability based on information and specifications provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment, or to provide engineering advice in relation to a specific situation. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

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