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A Hypertherm Associates Brand

XPR™
Cut Charts

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809830 – REVISION 7

ENGLISH

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- ☑ **Education:** Registration gives you free access to online product training content via the Hypertherm Cutting Institute.
- ☑ **Confirmation of ownership:** Registration can serve as proof of purchase in case of an insurance loss.

Go to **www.hypertherm.com/registration** for easy and fast registration.

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For your records

Serial number: _____

Purchase date: _____

Distributor: _____

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Maintenance notes: _____

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XPR

Instruction Manual

809830
REVISION 7

ENGLISH
Original instructions

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For training and education resources, go to the Hypertherm Cutting Institute (HCI) online at www.hypertherm.com/hci.

ENGLISH

WARNING! Before operating any Hypertherm equipment, read the safety instructions in your product's manual, the *Safety and Compliance Manual* (80669C), *Waterjet Safety and Compliance Manual* (80943C), and *Radio Frequency Warning Manual* (80945C). Failure to follow safety instructions can result in personal injury or in damage to equipment.

Copies of the manuals can come with the product in electronic and printed formats. Electronic copies are also on our website. Many manuals are available in multiple languages at www.hypertherm.com/docs.

BG (БЪЛГАРСКИ/BULGARIAN)

ПРЕДУПРЕЖДЕНИЕ! Преди да работите с което и да е оборудване Hypertherm, прочетете инструкциите за безопасност в ръководството на вашия продукт, „Инструкция за безопасност и съответствие“ (80669C), „Инструкция за безопасност и съответствие на Waterjet“ (80943C) и „Инструкция за предупреждение за радиочестота“ (80945C).

Продуктът може да е съпроводен от копия на ръководствата в електронен и в печатен формат. Тези в електронен формат са достъпни също на уебсайта ни. Много ръководства са налице на няколко езика на адрес www.hypertherm.com/docs.

CS (ČESKY/CZECH)

VAROVÁNÍ! Před uvedením jakéhokoli zařízení Hypertherm do provozu si přečtěte bezpečnostní pokyny v příručce k produktu a v *Manuálu pro bezpečnost a dodržování předpisů* (80669C), *Manuálu pro bezpečnost a dodržování předpisů při řezání vodním paprskem* (80943C) a *Manuálu varování ohledně rádiových frekvencí* (80945C).

Kopie příruček mohou být součástí dodávky produktu, a to v elektronické i tištěné formě. Elektronické kopie jsou k dispozici i na našich webových stránkách. Mnoho příruček je k dispozici v různých jazycích na stránce www.hypertherm.com/docs.

DA (DANSK/DANISH)

ADVARSEL! Inden Hypertherm udstyr tages i brug skal sikkerhedsinstruktionerne i produktets manual og i *Manual om sikkerhed og overholdelse af krav* (80669C), *Manual om sikkerhed og overholdelse af krav for vandstråleskæring* (80943C), og *Manual om radiofrekvensadvarsel* (80945C), gennemlæses.

Kopier af manualerne kan leveres med produktet i elektronisk og trykt format. Elektroniske kopier findes også på vores hjemmeside. Mange manualer er tilgængelige på flere sprog på www.hypertherm.com/docs.

DE (DEUTSCH/GERMAN)

WARNUNG! Bevor Sie ein Hypertherm-Gerät in Betrieb nehmen, lesen Sie bitte die Sicherheitsanweisungen in Ihrer Bedienungsanleitung, das *Handbuch für Sicherheit und Übereinstimmung* (80669C), das *Handbuch für Sicherheit und Compliance bei Wasserstrahl-Schneidanlagen* (80943C) und das *Handbuch für Hochfrequenz-Warnung* (80945C).

Bedienungsanleitungen und Handbücher können dem Gerät in elektronischer Form oder als Druckversion beiliegen. In elektronischer Form liegen sie auch auf unserer Website vor. Viele Handbücher stehen in verschiedenen Sprachen auf www.hypertherm.com/docs zur Verfügung.

ES (ESPAÑOL/SPANISH)

¡ADVERTENCIA! Antes de operar cualquier equipo Hypertherm, lea las instrucciones de seguridad del manual de su producto, del *Manual de seguridad y cumplimiento* (80669C), del *Manual de seguridad y cumplimiento en corte con chorro de agua* (80943C) y del *Manual de advertencias de radiofrecuencia* (80945C).

El producto puede incluir copias de los manuales en formato digital e impreso. Las copias digitales también están en nuestra página web. Hay diversos manuales disponibles en varios idiomas en www.hypertherm.com/docs.

ET (EESTI/ESTONIAN)

HOIATUS! Enne Hyperthermi mis tahes seadme kasutamist lugege läbi toote kasutusjuhendis olevad ohutusjuhised ning *Ohutus- ja vastavusjuhend* (80669C), *Veejoa ohutuse ja vastavuse juhend* (80943C) ja *Raadiosageduse hoiatusjuhend* (80945C). Ohutusjuhiste eiramine võib põhjustada vigastusi ja kahjustada seadmeid.

Juhiste koopiad võivad tootega kaasas olla elektrooniliselt või trükituna. Elektroonilised koopiad on saadaval ka meie veebilehel. Paljud kasutusjuhendid on erinevates keeltes saadaval veebilehel www.hypertherm.com/docs.

FI (SUOMI/FINNISH)

VAROITUS! Ennen minkään Hypertherm-laitteen käyttöä lue tuotteen käyttöoppaassa olevat turvallisuusohjeet, *turvallisuuden ja vaatimustenmukaisuuden käsikirja* (80669C), vesileikkauksen *turvallisuuden ja vaatimustenmukaisuuden käsikirja* (80943C) ja *radiotaajuusvaroitusten käsikirja* (80945C).

Käyttöoppaiden kopiot voivat olla tuotteen mukana sähköisessä ja tulostetussa muodossa. Sähköiset kopiot ovat myös verkkosivustollamme. Monet käyttöoppaat ovat myös saatavissa useilla kielillä www.hypertherm.com/docs.

FR (FRANÇAIS/FRENCH)

AVERTISSEMENT! Avant d'utiliser tout équipement Hypertherm, lire les consignes de sécurité du manuel de votre produit, du *Manuel de sécurité et de conformité* (80669C), du *Manuel de sécurité et de conformité du jet d'eau* (80943C) et du *Manuel d'avertissement relatif aux radiofréqunces* (80945C).

Les exemplaires des manuels qui accompagnent le produit peuvent être sous forme électronique ou papier. Les manuels sous forme électronique se trouvent également sur notre site Internet. Plusieurs manuels sont offerts en plusieurs langues à www.hypertherm.com/docs.

GR (ΕΛΛΗΝΙΚΆ/GREEK)

ΠΡΟΕΙΔΟΠΟΙΗΣΗ! Πριν θέσετε σε λειτουργία οποιονδήποτε εξοπλισμό της Hypertherm, διαβάστε τις οδηγίες ασφαλείας στο εγχειρίδιο του προϊόντος και στο *εγχειρίδιο ασφάλειας και συμμόρφωσης* (80669C), στο *εγχειρίδιο ασφάλειας και συμμόρφωσης του waterjet* (80943C) και στο *εγχειρίδιο προειδοποιήσεων για τις ραδιοσυχνότητες* (80945C).

Το προϊόν μπορεί να συνοδεύεται από αντίγραφα των εγχειριδίων σε ηλεκτρονική και έντυπη μορφή. Τα ηλεκτρονικά αντίγραφα υπάρχουν επίσης στον ιστότοπό μας. Πολλά εγχειρίδια είναι διαθέσιμα σε διάφορες γλώσσες στο www.hypertherm.com/docs.

HU (MAGYAR/HUNGARIAN)

VIGYÁZAT! Mielőtt bármilyen Hypertherm berendezést üzemeltetne, olvassa el a biztonsági információkat a termék kézikönyvében, a *Biztonsági és szabálykövetési kézikönyvben* (80669C), a *Vízsugaras biztonsági és szabálykövetési kézikönyvben* (80943C) és a *Rádiófrekvenciás figyelmeztetéseket tartalmazó kézikönyvben* (80945C).

A termékhez a kézikönyv példányai elektronikus és nyomtatott formában is mellékelve lehetnek. Az elektronikus példányok webhelyünkön is megtalálhatók. Számos kézikönyv áll rendelkezésre több nyelven a www.hypertherm.com/docs weboldalon.

ID (BAHASA INDONESIA/INDONESIAN)

PERINGATAN! Sebelum mengoperasikan peralatan Hypertherm, bacalah petunjuk keselamatan dalam manual produk Anda, *Manual Keselamatan dan Kepatuhan* (80669C), *Manual Keselamatan dan Kepatuhan Jet Air* (80943C), dan *Manual Peringatan Frekuensi Radio* (80945C). Kegagalan mengikuti petunjuk keselamatan dapat menyebabkan cedera pribadi atau kerusakan pada peralatan.

Produk mungkin disertai salinan manual atau petunjuk dalam format elektronik maupun cetak. Salinan elektronik juga tersedia di situs web kami. Berbagai manual tersedia dalam beberapa bahasa di www.hypertherm.com/docs.

IT (ITALIANO/ITALIAN)

AVVERTENZA! Prima di usare un'attrezzatura Hypertherm, leggere le istruzioni sulla sicurezza nel manuale del prodotto, nel *Manuale sulla sicurezza e la conformità* (80669C), nel *Manuale sulla sicurezza e la conformità Waterjet* (80943C) e nel *Manuale di avvertenze sulla radiofrequenza* (80945C).

Copie del manuale possono accompagnare il prodotto in formato cartaceo o elettronico. Le copie elettroniche sono disponibili anche sul nostro sito web. Molti manuali sono disponibili in diverse lingue all'indirizzo www.hypertherm.com/docs.

JA (日本語/JAPANESE)

警告！Hypertherm 機器を操作する前に、この製品説明書にある安全情報、「安全とコンプライアンスマニュアル」(80669C)、「ウォータージェットの安全とコンプライアンス」(80943C)、「高周波警告」(80945C) をお読みください。

説明書のコピーは、電子フォーマット、または印刷物として製品に同梱されています。電子コピーは当社ウェブサイトにも掲載されています。説明書の多くは www.hypertherm.com/docs にて複数の言語でご用意しています。

KO (한국어/KOREAN)

경고! Hypertherm 장비를 사용하기 전에 제품 설명서와 안전 및 규정 준수 설명서(80669C), 워터젯 안전 및 규정 준수 설명서(80943C) 그리고 무선 주파수 경고 설명서(80945C)에 나와 있는 안전 지침을 읽으십시오.

전자 형식과 인쇄된 형식으로 설명서 사본이 제품과 함께 제공될 수 있습니다. 전자 사본도 Hypertherm 웹사이트에서 보실 수 있으며 설명서 사본은 www.hypertherm.com/docs 에서 여러 언어로 제공됩니다.

NE (NEDERLANDS/DUTCH)

WAARSCHUWING! Lees voordat u Hypertherm-apparatuur gebruikt de veiligheidsinstructies in de producthandleiding, in de *Veiligheids- en nalevingshandleiding* (80669C) in de *Veiligheids- en nalevingshandleiding voor waterstralen* (80943C) en in de *Waarschuwingshandleiding radiofrequentie* (80945C).

De handleidingen kunnen in elektronische en gedrukte vorm met het product worden meegeleverd. Elektronische versies zijn ook beschikbaar op onze website. Veel handleidingen zijn in meerdere talen beschikbaar via www.hypertherm.com/docs.

NO (NORSK/NORWEGIAN)

ADVARSEL! Før du bruker noe Hypertherm-utstyr, må du lese sikkerhetsinstruksjonene i produktets håndbok, *håndboken om sikkerhet og samsvar* (80669C), *håndboken om vannjet sikkerhet og samsvar* (80943C), og *håndboken om radiofrekvensadvarsler* (80945C).

Eksemplarer av håndbøkene kan følge med produktet i elektronisk og trykt form. Elektroniske eksemplarer finnes også på nettstedet vårt. Mange håndbøker er tilgjengelig i flere språk på www.hypertherm.com/docs.

PL (POLSKI/POLISH)

OSTRZEŻENIE! Przed rozpoczęciem obsługi jakiegokolwiek systemu firmy Hypertherm należy się zapoznać z instrukcjami bezpieczeństwa zamieszczonymi w podręczniku produktu, w *podręczniku bezpieczeństwa i zgodności* (80669C), *podręczniku bezpieczeństwa i zgodności systemów strumienia wody* (80943C) oraz *podręczniku z ostrzeżeniem o częstotliwości radiowej* (80945C).

Do produktu mogą być dołączone podręczniki użytkownika w formie elektronicznej i drukowanej. Kopie elektroniczne znajdują się również w naszej witrynie internetowej. Wiele podręczników jest dostępnych w różnych językach pod adresem www.hypertherm.com/docs.

PT (PORTUGUÊS/PORTUGUESE)

ADVERTÊNCIA! Antes de operar qualquer equipamento Hypertherm, leia as instruções de segurança no manual do seu produto, no *Manual de Segurança e de Conformidade* (80669C), no *Manual de Segurança e de Conformidade do Waterjet* (80943C) e no *Manual de Advertência de radiofrequência* (80945C).

Cópias dos manuais podem vir com o produto nos formatos eletrônico e impresso. Cópias eletrônicas também são encontradas em nosso website. Muitos manuais estão disponíveis em vários idiomas em www.hypertherm.com/docs.

RO (ROMÂNĂ/ROMANIAN)

AVERTIZARE! Înainte de utilizarea oricărui echipament Hypertherm, citiți instrucțiunile de siguranță din manualul produsului, *manualul de siguranță și conformitate* (80669C), *manualul de siguranță și conformitate Waterjet* (80943C) și din *manualul de avertizare privind radiofrecvența* (80945C).

Produsul poate fi însoțit de copii ale manualelor în format tipărit și electronic. Exemplarele electronice sunt disponibile și pe site-ul nostru web. Numeroase manuale sunt disponibile în mai mult limbi la adresa: www.hypertherm.com/docs.

RU (РУССКИЙ/RUSSIAN)

БЕРЕГИСЬ! Перед работой с любым оборудованием Hypertherm ознакомьтесь с инструкциями по безопасности, представленными в руководстве, которое поставляется вместе с продуктом, в *Руководстве по безопасности и соответствию* (80669C), в *Руководстве по безопасности и соответствию для водоструйной резки* (80943C) и *Руководстве по предупреждению о радиочастотном излучении* (80945C).

Копии руководств, которые поставляются вместе с продуктом, могут быть представлены в электронном и бумажном виде. Электронные копии также доступны на нашем веб-сайте. Целый ряд руководств доступны на нескольких языках по ссылке www.hypertherm.com/docs.

SK (SLOVENČINA/SLOVAK)

VÝSTRAHA! Pred použitím akéhokoľvek zariadenia od spoločnosti Hypertherm si prečítajte bezpečnostné pokyny v návode na obsluhu vášho zariadenia a v *Manuáli o bezpečnosti a súlade s normami* (80669C), *Manuáli o bezpečnosti a súlade s normami pre systém rezania vodou* (80943C) a v *Manuáli s informáciami o rádiofrekvencii* (80945C).

Návod na obsluhu sa dodáva spolu s produktom v elektronickej a tlačenej podobe. Jeho elektronický formát je dostupný aj na našej webovej stránke. Mnohé z návodov na obsluhu sú dostupné vo viacjazyčnej mutácii na stránke www.hypertherm.com/docs.

SL (SLOVENŠČINA/SLOVENIAN)

OPOZORILO! Pred uporabo katerekoli Hyperthermove opreme preberite varnostna navodila v priročniku vašega izdelka, v *Priročniku za varnost in skladnost* (80669C), v *Priročniku za varnost in skladnost sistemov rezanja z vodnim curkom* (80943C) in v *Priročniku Opozorilo o radijskih frekvencah* (80945C).

Izvodi priročnikov so lahko izdelku priloženi v elektronski in tiskani obliki. Elektronski izvodi so na voljo tudi na našem spletnem mestu. Številni priročniki so na voljo v različnih jezikih na naslovu www.hypertherm.com/docs.

SR (SRPSKI/SERBIAN)

UPOZORENJE! Pre rukovanja bilo kojom Hyperthermovom opremom pročitajte uputstva o bezbednosti u svom priručniku za proizvod, *Priručniku o bezbednosti i usaglašenosti* (80669C), *Priručniku o bezbednosti i usaglašenosti Waterjet tehnologije* (80943C) i *Priručniku sa upozorenjem o radio-frekvenciji* (80945C).

Уз производ се испоручују копије приручника у електронском или штампаном формату. Електронске копије су такође доступне на нашем веб-сајту. Многи приручници су доступни на више језика на адреси www.hypertherm.com/docs.

SV (SVENSKA/SWEDISH)

VARNING! Läs häftet säkerhetsinformationen i din produkts *säkerhets- och efterlevnadsmanual* (80669C), *säkerhets- och efterlevnadsmanualen för Waterjet* (80943C) och *varningsmanualen för radiofrekvenser* (80945C) för viktig säkerhetsinformation innan du använder eller underhåller Hypertherm-utrustning.

Kopior av manualerna kan medfölja produkten i elektroniskt och tryckt format. Elektroniska kopior finns också på vår webbplats. Många manualer finns på flera språk på www.hypertherm.com/docs.

TH (ภาษาไทย/THAI)

คำเตือน! ก่อนการใช้งานอุปกรณ์ของ Hypertherm ทั้งหมด โปรดอ่านคำแนะนำด้านความปลอดภัยในคู่มือการใช้สินค้า คู่มือด้านความปลอดภัยและการปฏิบัติตาม (80669C), คู่มือด้านความปลอดภัยและการปฏิบัติตามสำหรับการใช้หัวตัดระบบวอเตอร์เจ็ต (80943C) และ คู่มือคำเตือนเกี่ยวกับความถี่วิทยุ (80945C) การไม่ปฏิบัติตามคำแนะนำด้านความปลอดภัยอาจส่งผลให้เกิดการบาดเจ็บหรือเกิดความเสียหายต่ออุปกรณ์

สำเนาคู่มือทั้งในรูปแบบอิเล็กทรอนิกส์และแบบสิ่งพิมพ์จะถูกแนบมาพร้อมกับผลิตภัณฑ์ สำเนาคู่มือในรูปแบบอิเล็กทรอนิกส์ของผลิตภัณฑ์และสำเนาคู่มือต่าง ๆ ในหลากหลายภาษานั้นยังมีให้บริการบนเว็บไซต์ www.hypertherm.com/docs ของเราอีกด้วย

TR (TÜRKÇE/TURKISH)

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Kılavuzların kopyaları, elektronik ve basılı formatta ürünle birlikte verilebilir. Elektronik kopyalar web sitemizde de yer alır. Kılavuzların birçoğu www.hypertherm.com/docs adresinde birçok dilde mevcuttur.

VI (TIẾNG VIỆT/VIETNAMESE)

CẢNH BÁO! Trước khi vận hành bất kỳ thiết bị Hypertherm nào, hãy đọc các hướng dẫn an toàn trong hướng dẫn sử dụng sản phẩm của bạn, *Sổ tay An toàn và Tuân thủ* (80669C), *Sổ tay An toàn và Tuân thủ Tia nước* (80943C), và *Hướng dẫn Cảnh báo Tần số Vô tuyến* (80945C). Không tuân thủ các hướng dẫn an toàn có thể dẫn đến thương tích cá nhân hoặc hư hỏng thiết bị.

Bản sao của sổ tay có thể đi kèm với sản phẩm ở định dạng điện tử và in. Bản điện tử cũng có trên trang web của chúng tôi. Nhiều sổ tay có sẵn bằng nhiều ngôn ngữ tại www.hypertherm.com/docs .

ZH-CN (简 体中文/CHINESE SIMPLIFIED)

警告！ 在操作任何海宝设备之前，请阅读产品手册、《安全和法规遵守手册》(80669C)、《水射流安全和法规遵守手册》 (80943C) 以及 《射频警告手册》(80945C) 中的安全操作说明。

随产品提供的手册可提供电子版和印刷版两种格式。电子版本同时也在我们的网站上提供。很多手册有多种语言版本，详见 www.hypertherm.com/docs.

ZH-TW (繁 體中文/CHINESE TRADITIONAL)

警告！在操作任何 Hypertherm 設備前，請先閱讀您產品手冊內的安全指示，包括 《安全和法規遵從手冊》(80669C) 、《水刀安全和法規遵從手冊》（80943C），以及 《無線電頻率警示訊號手冊》（80945C）。

電子版和印刷版手冊複本可能隨產品附上。您也可以前往我們的網站下載電子版手冊。我們的網站上還以多種語言形式提供多種手冊，請造訪 www.hypertherm.com/docs 。

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Electromagnetic Compatibility (EMC)

Introduction

Hypertherm's CE-marked equipment is built in compliance with standard EN60974-10. The equipment should be installed and used in accordance with the information below to achieve electromagnetic compatibility.

The limits required by EN60974-10 may not be adequate to completely eliminate interference when the affected equipment is in close proximity or has a high degree of sensitivity. In such cases it may be necessary to use other measures to further reduce interference.

This cutting equipment is designed for use only in an industrial environment.

Installation and use

The user is responsible for installing and using the plasma equipment according to the manufacturer's instructions.

If electromagnetic disturbances are detected then it shall be the responsibility of the user to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the cutting circuit, see *Earthing of the workpiece*. In other cases, it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases, electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

Assessment of area

Before installing the equipment, the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

- **a.** Other supply cables, control cables, signaling and telephone cables; above, below and adjacent to the cutting equipment.
- **b.** Radio and television transmitters and receivers.
- **c.** Computer and other control equipment.
- **d.** Safety critical equipment, for example guarding of industrial equipment.
- **e.** Health of the people around, for example the use of pacemakers and hearing aids.
- **f.** Equipment used for calibration or measurement.
- **g.** Immunity of other equipment in the environment. User shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures.
- **h.** Time of day that cutting or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

Methods of reducing emissions

Mains supply

Cutting equipment must be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply.

Consideration should be given to shielding the supply cable of permanently installed cutting equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the cutting mains supply so that good electrical contact is maintained between the conduit and the cutting power source enclosure.

Maintenance of cutting equipment

The cutting equipment must be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the cutting equipment is in operation. The cutting equipment should not be modified in any way, except as set forth in and in accordance with the manufacturer's written instructions. For example, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

Cutting cables

The cutting cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

Equipotential bonding

Bonding of all metallic components in the cutting installation and adjacent to it should be considered.

However, metallic components bonded to the workpiece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode (nozzle for laser heads) at the same time.

The operator should be insulated from all such bonded metallic components.

Electromagnetic Compatibility (EMC)

Earthing of the workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, for example, ship's hull or building steel work, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitances selected according to national regulations.

Note: The cutting circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorized by a person who is competent to assess whether the changes will increase the risk of injury, for example, by allowing parallel cutting current return paths which may damage the earth circuits of other equipment.
Further guidance is provided in IEC 60974-9, Arc Welding Equipment, Part 9: Installation and Use.

Screening and shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire plasma cutting installation may be considered for special applications.

Warranty

Attention

Genuine Hypertherm parts are the factory-recommended replacement parts for your Hypertherm system. Any damage or injury caused by the use of other than genuine Hypertherm parts may not be covered by the Hypertherm warranty, and will constitute misuse of the Hypertherm Product.

You are solely responsible for the safe use of the Product. Hypertherm does not and cannot make any guarantee or warranty regarding the safe use of the product in your environment.

General

Hypertherm, Inc. warrants that its Products shall be free from defects in materials and workmanship for the specific periods of time set forth herein and as follows: if Hypertherm is notified of a defect (i) with respect to the plasma power supply within a period of two (2) years from the date of its delivery to you, with the exception of Powermax brand power supplies, which shall be within a period of three (3) years from the date of delivery to you, and (ii) with respect to the torch and leads within a period of one (1) year from its date of delivery to you, with the exception of the HPRXD short torch with integrated lead, which shall be within a period of six (6) months from the date of delivery to you, and with respect to torch lifter assemblies within a period of one (1) year from its date of delivery to you, and with respect to Automation products one (1) year from its date of delivery to you, with the exception of the EDGE Connect CNC, EDGE Connect T CNC, EDGE Connect TC CNC, EDGE Pro CNC, EDGE Pro Ti CNC, MicroEDGE Pro CNC, and ArcGlide THC, which shall be within a period of two (2) years from the date of delivery to you, and (iii) with respect to HyIntensity fiber laser components within a period of two (2) years from the date of its delivery to you, with the exception of laser heads and beam delivery cables, which shall be within a period of one (1) year from its date of delivery to you.

All third-party engines, engine accessories, alternators, and alternator accessories are covered by the respective manufacturers' warranties and not covered by this warranty.

This warranty shall not apply to any Powermax brand power supplies that have been used with phase converters. In addition, Hypertherm does not warranty systems that have been damaged as a result of poor power quality, whether from phase converters or incoming line power. This warranty shall not apply to any product which has been incorrectly installed, modified, or otherwise damaged.

Hypertherm provides repair, replacement or adjustment of the Product as the sole and exclusive remedy, if and only if the warranty set forth herein properly is invoked and applies. Hypertherm, at its sole option, shall repair, replace, or adjust, free of charge, any defective Products covered by this warranty which shall be returned with Hypertherm's prior authorization (which shall not be unreasonably withheld), properly packed, to Hypertherm's place of business in Hanover, New Hampshire, or to an authorized Hypertherm repair facility, all costs, insurance and freight pre paid by the customer. Hypertherm shall not be liable for any repairs, replacement, or adjustments of Products covered by this warranty, except those made pursuant to this paragraph and with Hypertherm's prior written consent.

The warranty set forth above is exclusive and is in lieu of all other warranties, express, implied, statutory, or otherwise with respect to the Products or as to the results which may be obtained therefrom, and all implied warranties or conditions of quality or of merchantability or fitness for a particular purpose or against infringement. The foregoing shall constitute the sole and exclusive remedy for any breach by Hypertherm of its warranty.

Distributors/OEMs may offer different or additional warranties, but Distributors/OEMs are not authorized to give any additional warranty protection to you or make any representation to you purporting to be binding upon Hypertherm.

Patent indemnity

Except only in cases of products not manufactured by Hypertherm or manufactured by a person other than Hypertherm not in strict conformity with Hypertherm's specifications and in cases of designs, processes, formulae, or combinations not developed or purported to be developed by Hypertherm, Hypertherm will have the right to defend or settle, at its own expense, any suit or proceeding brought against you alleging that the use of the Hypertherm product, alone and not in combination with any other product not supplied by Hypertherm, infringes any patent of any third party. You shall notify Hypertherm promptly upon learning of any action or threatened action in connection with any such alleged infringement (and in any event no longer than fourteen (14) days after learning of any action or threat of action), and Hypertherm's obligation to defend shall be conditioned upon Hypertherm's sole control of, and the indemnified party's cooperation and assistance in, the defense of the claim.

Limitation of liability

In no event shall Hypertherm be liable to any person or entity for any incidental, consequential direct, indirect, punitive or exemplary damages (including but not limited to lost profits) regardless of whether such liability is based on breach of contract, tort, strict liability, breach of warranty, failure of essential purpose, or otherwise, and even if advised of the possibility of such damages. Hypertherm shall not be liable for any losses to Distributor based on down time, lost production or lost profits. It is the intention of the Distributor and Hypertherm that this provision be construed by a court as being the broadest limitation of liability consistent with applicable law.

National and local codes

National and local codes governing plumbing and electrical installation shall take precedence over any instructions contained in this manual. In no event shall Hypertherm be liable for injury to persons or property damage by reason of any code violation or poor work practices.

Warranty

Liability cap

In no event shall Hypertherm's liability, if any, whether such liability is based on breach of contract, tort, strict liability, breach of warranties, failure of essential purpose or otherwise, for any claim, action, suit or proceeding (whether in court, arbitration, regulatory proceeding or otherwise) arising out of or relating to the use of the Products exceed in the aggregate the amount paid for the Products that gave rise to such claim.

Insurance

At all times you will have and maintain insurance in such quantities and types, and with coverage sufficient and appropriate to defend and to hold Hypertherm harmless in the event of any cause of action arising from the use of the products.

Transfer of rights

You may transfer any remaining rights you may have hereunder only in connection with the sale of all or substantially all of your assets or capital stock to a successor in interest who agrees to be bound by all of the terms and conditions of this Warranty. Within thirty (30) days before any such transfer occurs, you agree to notify in writing Hypertherm, which reserves the right of approval. Should you fail timely to notify Hypertherm and seek its approval as set forth herein, the Warranty set forth herein shall be null and void and you will have no further recourse against Hypertherm under the Warranty or otherwise.

Waterjet product warranty coverage

Product	Parts coverage
HyPrecision pumps	27 months from the ship date, or 24 months from the date of proven installation, or 4,000 hours, whichever occurs first
PowerDredge abrasive removal system	15 months from the ship date or 12 months from the date of proven installation, whichever occurs first
EcoSift abrasive recycling system	15 months from the ship date or 12 months from the date of proven installation, whichever occurs first
Abrasive metering devices	15 months from the ship date or 12 months from the date of proven installation, whichever occurs first
On/off valve air actuators	15 months from the ship date or 12 months from the date of proven installation, whichever occurs first
Diamond orifices	600 hours of use with the use of a thimble filter and compliance with Hypertherm's water quality requirements

Consumable parts are not covered by this warranty. Consumable parts include, but are not limited to, high-pressure water seals, check valves, cylinders, bleed-down valves, low-pressure seals, high-pressure tubing, low- and high-pressure water filters and abrasive collection bags. All third-party pumps, pump accessories, hoppers, hopper accessories, dryer boxes, dryer box accessories and plumbing accessories are covered by the respective manufacturers' warranties and not covered by this warranty.

Cut Charts

Overview

All of the XPR cutting processes have a unique process identification number, also called a process ID. Each process ID aligns with a specific set of pre-programmed values in the electronic cut chart database.

Processes IDs can be selected by:

- Type and thickness of the metal
- Cutting current
- Plasma-gas and shield-gas types
- Process category number

When you select a process ID from the CNC interface or the Operate screen in the XPR web interface, the cutting system automatically uses the settings for that process based on the pre-programmed values. On-screen lists of process options let you select, monitor, and control processes from the CNC interface or the Operate screen in the XPR web interface.

Hypertherm's cut charts are designed to give the best quality with minimal dross. Manual selection of process settings is not necessary in most cases. However, it is possible to use the override or offset commands to adjust some pre-programmed settings, within limits. For information about how to do this, refer to the instruction manual that came with your XPR cutting system.

How to use cut charts

The cut charts in this manual are for reference purposes. Refer to the electronic cut charts that are on your CNC interface or the Operate screen in the XPR web interface for the most reliable process-selection options.

For information about how to find the electronic cut charts, refer to the instruction manual that came with your CNC.

Figure 1 – Table headings from example cut chart

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm

XPR cut chart terminology and process descriptions

Workpiece thickness

Workpiece thickness is the effective thickness of the metal that is being cut, measured in millimeters (mm) or U.S. customary inches (in.).

Process Core Thickness (PCT)

The cut chart for every cutting process contains a range of possible thicknesses. Hypertherm cutting processes are based on an optimized range of thicknesses to obtain the best overall balance of productivity and cut quality (process category 1 for XPR). This optimized range is called the Process Core Thickness (PCT). Thicknesses that are greater than and less than the PCT give results that have a different balance for cut quality, cut speed, and piercing capability.

Process category numbers

The XPR cut charts have up to five process categories. Each category has a unique process category number (1 – 5) that correlates to the performance that you can expect. The process category number for the process that you select has an effect on the quality-speed balance.

For best results, Hypertherm recommends that you select process category number 1 whenever possible. Process category 1 represents an optimized thickness (or PCT) for that cut process with the overall best balance of cut quality and cut speed.

Process selection for mild steel on page 18 and Process selection for stainless steel and aluminum on page 22 describe the results that you can expect with different process category numbers.

XPR Process ID

When you select a process ID from the CNC interface or the Operate screen in the XPR web interface, you automatically get the optimized settings that Hypertherm recommends for that process.

The optimized settings come from Hypertherm's extensive laboratory tests. Because of differences in cutting systems, metals, and consumable parts, some small adjustments to the settings can be necessary. However, in most cases, you can expect the best results when you use the optimized settings that come with a process ID.

Arc voltage

The arc voltage value that is in the cut charts is for reference and is estimated on an average cutting system configuration. Lead length can have an effect on the arc voltage. If the leads for your XPR cutting system are shorter or longer than average, it can be necessary to adjust the settings to get the results you want.

Pierce height and transfer height

For most processes, the torch transfers the arc to the workpiece from the pierce height and then moves to cut height after the pierce-delay time expires. For some of the thickest metals that can be pierced, the transfer height is used to position the torch closer to the workpiece. This creates a more reliable arc. After arc transfer, the torch moves to pierce height for piercing, followed by cut height for cutting.

Pierce and transfer settings in the cut charts are based on the torch at a 90° angle to the workpiece.

Pierce delay time

The pierce-delay times that are in the cut charts are estimated with moderately worn consumable parts. If your consumable parts have more or less wear, it can be necessary to adjust the settings to get the results you want.

Consumable parts naturally deteriorate and become worn from use. As this occurs, the time necessary to pierce the workpiece increases.

Kerf compensation

All cut charts include kerf compensation values. You can use these values with a controller to offset the cut path and create a part of the correct size. The kerf compensation values that are in the cut charts are estimated with new consumable parts. If your consumable parts have more wear, it can be necessary to change the kerf-compensation setting to get the results you want.

Process selection for mild steel

Table 1 – Expected quality-speed results in millimeters per minute (mm/min)

Thickness (mm)	O_2/O_2 30 A	O2/Air 50 A	80 A	130 A	170 A	220 A	300 A	460 A
0.50	5348							
0.55	5223							
0.60	5098							
0.70	4615							
0.80	4217							
0.90	3967							
1	3604							
1.2	2847							
1.5	2198							
1.6	2023							
2	1490							
2.4	1358	4354						
2.5	1325	4262						
3	1153	3820	5582	6502				
3.5	1003	3616	4539	6029				
4	908	3144	4303	5557				
5	726	3222	3774	4681	5564			
6		1919	3048	4036	5080	6096		
7		1622	2648	3602	4768	5628		
8		1369	2417	3282	4288	4908		
9			2081	2962	3808	4188		
10			1807	2680	3461	3715	4500	
11			1601	2440	3261	3515	4200	
12			1405	2200	3061	3315	3940*	4940
13				1984	2837	3139	3865*	4770
14				1826	2557	3019	3625*	4590
15				1665	2277	2899	3440	4420
16				1509	2017	2769	3280	4220
17				1389	1897	2569	3075	3910
18				1269	1777	2369	2875	3600
19				1149	1657	2169	2670	3290
20				1044	1575	2064	2550	3140
21				940	1495	1964	2430	3010
22				836	1415	1864	2310	2870
23				738	1335	1764	2190	2730
24				642	1255	1664	2070	2600
25				546	1175	1564	1950	2460
26				498	1107	1476	1850	2360
27				482	1047	1396	1770	2270
28				466	987	1316	1690	2180
29				450	927	1236	1615	2090

XPR process category
Category 3
Category 1
Category 2
Category 4
Category 5

*N_2 used as shield gas

†Argon-assisted piercing

††Argon-assisted cutting

Argon-assist technology for thicker piercing and thicker severance cutting is available with the CorePlus, VWI, and OptiMix gas connect consoles.

The process engineers at Hypertherm Associates work to optimize a range of thicknesses that give the best overall balance of productivity and cut quality for a wide range of processes. This optimized range is called the Process Core Thickness (PCT).

Thickness (mm)	O_2/O_2 30 A	50 A	80 A	O2/Air 130 A	170 A	220 A	300 A	460 A
30				434	867	1156	1530	2000
31				418	807	1076	1450	1920
32				398	752	1006	1380	1830
33				366	712	966	1310	1750
34				334	672	926	1250	1680
35				304	632	886	1190	1600
36				288	592†	846	1130	1530
37				272	552†	806	1070	1450
38				256	512†	766	1020	1370
40					462†	686	940	1300
44					366	526	780*	1150
45					347	490	740*	1110
48					299	394	650*	970
50					267	330	560*†	850
55					–	237	450*	750†
58					–	190	415*	690†
60					152	158	385*	640†
64							345*	540†
65							330*	530†
70							250*	400
75							185*	280
80							165*	240
90								170
100								100††

Table 2 – Expected quality-speed results in inches per minute (in/min)

Thickness (in.)	O_2/O_2 30 A	O_2/Air 50 A	80 A	130 A	170 A	220 A	300 A	460 A
26GA	215							
24GA	200							
22GA	170							
20GA	155							
18GA	110							
16GA	85							
14GA	60							
12GA	50	155	225					
1/8	43	148	217					
10GA	40	145	180	240				
3/16	30	95	155	190	230			
1/4		70	110	150	200	240		
5/16		55	96	130	170	–		
3/8			75	110	140	150	180	
7/16			62	95	127	–	–	
1/2			55	80	115	125	155*	190
9/16				70	97	125	140*	179
5/8				60	80	110	130	168
3/4				45	65	85	105	129
7/8				32	55	75	90	112
1				20	45	60	75	95
1-1/8				18	37	50	65	84
1-1/4				16	30	40	55	73
1-3/8				12	25	35	47	64
1-1/2				10	20†	30	40	54
1-9/16					17†	–	–	–
1-5/8					17	25	35	50
1-3/4					14	20	30*	45
1-7/8					12	15	25*	39
2					10	12	21*†	33
2-1/8					–	9	18*	31†
2-1/4					–	8	17*	28†
2-3/8					6	7	15*	25†
2-1/2						6	14*	22†
2-5/8							12*	19
2-3/4							10*	16
2-7/8							8*	14
3							7*	11
3-1/8							7*	9
3-1/4								8
3-1/2								7
3-3/4								5
4								4††

XPR process category
Category 3
Category 1
Category 2
Category 4
Category 5

*N_2 used as shield gas

†Argon-assisted piercing

††Argon-assisted cutting

Argon-assist technology for thicker piercing and thicker severance cutting is available with the CorePlus, VWI, and OptiMix gas connect consoles.

The process engineers at Hypertherm Associates work to optimize a range of thicknesses that give the best overall balance of productivity and cut quality for a wide range of processes. This optimized range is called the Process Core Thickness (PCT).

Table 3 – Process category options and expected quality-speed results for mild steel processes

XPR process category					
	Number	Condition	Description	Quality	Speed
	1	Process Core Thickness (PCT)	▪ Best overall balance of productivity and cut quality ▪ The process is optimized for this thickness ▪ Virtually dross free	Very good	Very good
	2	Thicker than PCT	▪ Good choice when cut-edge quality is more important than speed ▪ Some low-speed dross	Very good to excellent	Lower
	3	Thinner than PCT	▪ Good choice when speed is more important than cut-edge quality ▪ Virtually dross free	Lower	Higher
	4	Edge start for most processes	▪ Edge start is necessary with the exception of argon-assist processes ▪ Thick, low-speed dross is possible	Good	Low
	5	Severance	▪ Maximum thickness for these processes ▪ Edge start is necessary ▪ Cut speeds are very slow ▪ In most cases, expect speeds less than 254 mm (10 in.) per minute ▪ Cut-edge quality can be rough ▪ Significant dross ▪ Thick-metal cutting technologies can be necessary	Very low	Very low

Pierce and transfer settings in the cut charts are based on the torch at a 90° angle to the workpiece.

In general, Hypertherm recommends lower-amperage processes for the best cut-edge quality, and higher-amperage processes for the best dross-free cutting. When speed is more important than quality use a higher-amperage process. Refer to the cut charts for guidance.

Process selection for stainless steel and aluminum

Table 4 – Process recommendations for stainless steel and aluminum

Workpiece thickness		Type of metal and process	
		Stainless steel	Aluminum
1	0.036	40 A N_2/N_2*	40 A Air/Air
3	0.105		
3.5	0.125	60 A N_2/N_2*	60 A Air/Air*
5	0.188		60 A N_2/N_2*
6	0.250	80 A F5/N_2*	80 A N_2/H_2O
10	0.375		
12	0.500	130 A H_2-mix/N_2*	130 A N_2/H_2O
16	0.625	170 A H_2-mix/N_2*	170 A N_2/H_2O
20	0.750	300 A H_2-mix/N_2*	170 A N_2/H_2O
25	1.000		300 A N_2/H_2O
32	1.250	460 A H_2-mix/N_2	
38	1.500		
50	2.000**		
64	2.500**		460 A H_2-mix/N_2
Edge start		**Stainless steel**	**Aluminum**
75	3.000	460 A H_2-mix/N_2	460 A H_2-mix/N_2
90	3.500		
100	4.000***	460 A H_2-mix/Ar	Not recommended
130	5.000***		

* N_2/H_2O gives very good results when cutting stainless steel. Make sure to use the correct pierce technique when using N_2/H_2O for stainless steel cutting because the cooling effects of water can cause puddles to get larger as the metal solidifies.

** Argon-assisted piercing.

*** Argon-assisted cutting.

HyDefinition® inox (HDi) vented processes

Cut charts for HyDefinition vented processes are developed on SAE grade 304L stainless steel. When cutting other grades of stainless steel, adjustments can be necessary to get the best cut quality.

If you decide that it is necessary to adjust a pre-programmed setting, use the override or offset commands to make incremental changes to the original value. For information about how to do this, speak with your cutting machine supplier or regional Hypertherm Technical Service team.

Table 5 – Expected quality-speed results, based on process category, for stainless steel and aluminum

Process category number	Process category condition	Category description	Quality	Speed
Category 1	Process Core Thickness (PCT)	▪ When possible, select Category 1 for optimal edge quality and speed, with minimal dross. ▪ The process is optimized for this thickness. ▪ Expect cut speeds that range from 1,016 mm/min – 3,048 mm/min (40 in/min – 120 in/min). ▪ Dross free, in most cases.	Very good to excellent	Very good
Category 2	Thicker than PCT	▪ In most situations, you can expect square cut edges with sharp top edges. ▪ Darker edge color is possible with stainless steel. ▪ Expect cut speeds that are slower than 1,016 mm/min (40 in/min). ▪ Expect some dross.	Good to very good	Lower
Category 3	Thinner than PCT	▪ Select Category 3 when speed is more important than edge quality. ▪ Expect cut speeds that are faster than 3,048 mm/min (120 in/min). ▪ Expect some dross.	Lower	Higher
Category 4	Edge start Only	▪ Edge start is necessary. ▪ Darker edge color is possible with stainless steel. ▪ Thick dross is possible.	Good	Low
Category 5	Severance	▪ This is the maximum thickness for these processes. ▪ Edge start is necessary. ▪ Expect cut speeds that are slower than 250 mm/min (10 in/min). ▪ Cut-edge quality can be rough. ▪ Expect significant dross. ▪ Thick-metal cutting techniques can be necessary.	Very low	Very low

Gas connect console capabilities by type

Gases / fluid	Core™	CorePlus™	Vented Water Injection™ (VWI)	OptiMix™
O_2, N_2, Air	■	■	■	■
Argon (Ar)	—	■	■	■
F5, Ar, H_2O	—	—	■	■
H_2-N_2-Ar mixing	—	—	—	■

Core gas connect console

Gives excellent mild steel cutting performance and very good to excellent angularity and edge finish on stainless steel up to 12 mm (0.5 in.). The N_2 HDi process keeps air from mixing in the plasma gas for a brighter edge finish.

CorePlus gas connect console

Includes all the capabilities of the Core gas connect console, plus argon marking and argon-assist technology for thicker piercing and thicker severance cutting.

Vented Water Injection (VWI) gas connect console

Includes all the capabilities of the Core and CorePlus gas connect consoles, plus very good to excellent stainless steel and aluminum cutting from the addition of F5 HDi processes and patented Vented Water Injection (VWI).

OptiMix gas connect console

Includes all the capabilities of the Core, CorePlus, and VWI gas connect consoles, plus 3-gas (H_2-N_2-Ar) mixing that gives the most options for very good to excellent stainless steel and aluminum cutting.

Processes when the torch is perpendicular to the workpiece

Many cutting processes and all piercing and marking processes use a perpendicular torch position, with the torch at a 90° angle to the workpiece.

Cutting processes

During cutting processes, the plasma arc goes through the full thickness of the workpiece. The length and shape of the cut is based on the path and duration of torch movement.

Marking processes

Marking processes use argon (Ar) or nitrogen (N_2) to make marks on the workpiece, without piercing or cutting through it. Marking a workpiece for secondary operations, such as bending or drilling or for alpha-numeric part identification, are examples of marking processes.

With argon marking, the type of metal, its thickness, and surface finish have an effect on marking quality. Torch speeds and current levels also have an effect:

- Slower torch speeds and higher currents make deeper marks.
- Faster torch speeds and lower currents make shallower marks.

Poor quality marking or burn-through can occur when the workpiece is less than 1.5 mm (0.06 in. or 16 GA).

Piercing processes

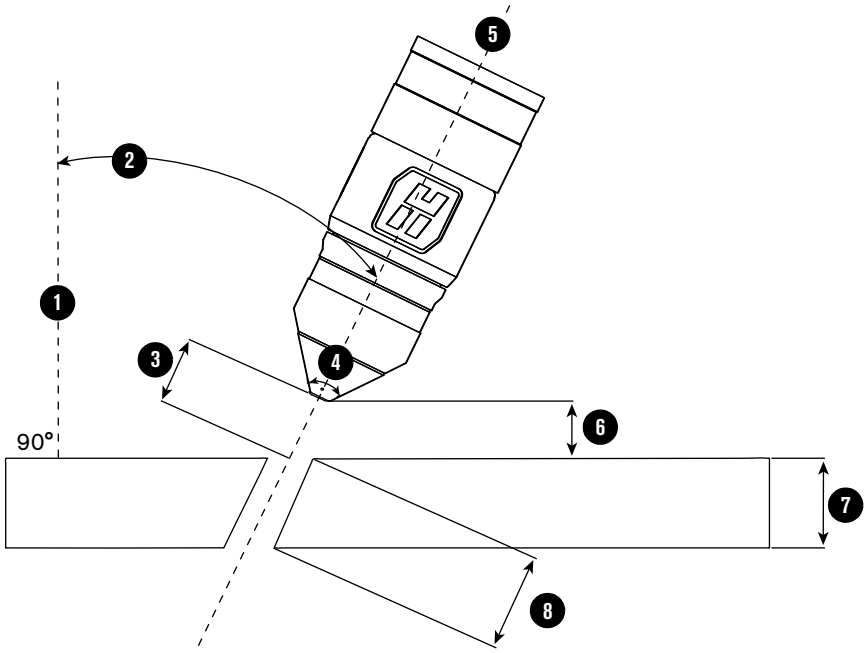
Piercing processes penetrate the full thickness of the workpiece. Piercing is also the first action involved in cutting a part. Use edge starts if piercing is not possible.

Bevel cutting

During bevel cutting, the torch is at an angle, **not** perpendicular, to the workpiece. The angle of the torch has an effect on the bevel angle that is cut.

The torch and consumable parts are designed so that the torch position can range from 0° – 52° while the torch tip remains the closest point to the workpiece. If you need an angle of more than 52°, move the torch up and away from the workpiece to increase the clearance.

Figure 2 – Example orientation of a torch during bevel cutting



1 **Perpendicular line**: The imaginary line that is at a 90° angle to the workpiece.

2 **Bevel angle**: The angle between the center line of the torch and an imaginary line that is perpendicular to the workpiece.

3 **Cut height**: The linear distance from the center of the torch to the workpiece surface along the torch center-line. For optimal results, select a cut height that is based on an "effective thickness" value in the cut charts.

If a specific cut height is inconsistent with a clearance requirement, select a slightly higher cut height to prevent torch collisions.

4 **Cone angle**: All XPR torches have a 76° cone angle that makes it possible to tilt or position the torch up to 52°. If you need an angle of more than 52°, move the torch up and away from the workpiece to increase the clearance.

5 **Torch center line**: The imaginary line along the central axis of the torch.

6 **Clearance**: The vertical distance from the lowest point of the torch to the surface of the workpiece. Make sure that the distance is at least 2 mm – 3 mm (0.080 in. – 0.120 in.) to decrease torch contact with any slag on top of the workpiece.

7 **Nominal thickness**: The vertical thickness of a workpiece. This is the thickness of the workpiece that the plasma arc cuts, marks, or pierces.

8 **Effective thickness**: The distance that the plasma arc travels through the workpiece during cutting. This value is equal to the nominal thickness, divided by the cosine of the bevel angle.

Arc voltage settings for bevel cutting are based on the torch position, workpiece thickness, cut speed, and effective cut height. For this reason, cut charts only include arc voltages for perpendicular-position cutting.

Cut charts for bevel cutting and bevel-compensation tables

All consumable processes are capable of up to 52° bevel cuts. Choose bevel-cutting settings from the cut chart, based on the effective thickness of the bevel cut through the workpiece.

It can be necessary to compensate the arc voltage, based on the effective cut height and thickness.

For the best bevel-cutting results, Hypertherm recommends the use of its True Bevel™ technology. With True Bevel technology, you get the cutting settings designed for the selected bevel angles and part sizes. For more information, refer to True Bevel technology – XPR bevel compensation charts (809890) and Torch geometry for bevel cutting on page 157.

Hypertherm's True Bevel software has specialized cut charts called "bevel-compensation tables." They are designed to give the best results on mild steel with minimal operator intervention.

For information about how to find and use the bevel-compensation tables, refer to the instruction manual that came with your CAM software.

Hypertherm's ProNest™ software also includes bevel-compensation tables.

For information about CNC-compatibility requirements and how to use bevel-compensation tables with non-Hypertherm CNCs, contact your cutting machine supplier or regional Hypertherm Technical Service team.

Recommendations to get the results you want

Troubleshooting dross

- Dross is more usual on a hot workpiece.
  - The first cut in a series often produces the least dross. You can expect more dross with more cuts.
- Changes in shield flow can have an effect on dross formation on non-ferrous metals.

Problem	Cause*	Solution
On mild steel, low-speed dross is heavier, but easy to remove.	The plasma arc can move ahead of the torch when the torch speed is too slow.	Increase the torch speed.
On mild steel, high-speed dross is finer, but difficult to remove.	The plasma arc can lag behind the torch when the torch speed is too fast.	Decrease the torch speed.

* Worn or damaged consumable parts can cause intermittent dross.

General recommendations

- You can decrease unwanted results and extend the life of consumable parts by using the optimized settings that Hypertherm recommends.
  - Always start with the optimized settings. In most cases, the settings that come with a process ID give the best results.
  - If you decide to adjust an optimized setting, use the offset or override commands to make incremental changes, within limits. Refer to *Process ID offsets / overrides* in the instruction manual that came with your cutting system.

- Keep the torch away from the workpiece during cutting. If the torch touches the workpiece it can damage the torch nozzle and shield. Damage to the surface of the workpiece is also possible if the torch touches the workpiece during cutting.
- Make sure to obey all recommendations for usual cutting system maintenance.
- Make sure to do routine service and maintenance to the drive system and rails. Unsteady drive systems and rail movement can make torch motion unsteady and cause irregular cut patterns. Refer to the instruction manual that came with your cutting machine or cutting table for information about how to do this.

Recommendations for perpendicular-position cutting

- Always start with the optimized settings for piercing the thickness of the workpiece that you want to cut.
- Make sure that the torch is at a 90° angle to the workpiece for perpendicular-position processes.
- Avoid firing the torch in the air. It is acceptable to begin a cut at the edge of the workpiece.
- Avoid lead-outs that move away from the workpiece and stretch the plasma arc.
- Do these steps to avoid the loss of a transferred plasma arc:
  - Complete every cut with the plasma arc still attached to the workpiece. Refer to *Automatic ramp-down error protection* in the instruction manual that came with your XPR cutting system.
  - Decrease the cutting speed when the end of the cut is near.
  - Stop the plasma arc before the part is completely cut. Let the cut complete during ramp down.
  - Send the path of the torch to the scrap area for ramp down.

Recommendations for piercing

- Always start with the optimized settings for piercing the thickness of the workpiece that you want to pierce.
- Use the recommended settings for transfer height and pierce.
- Use the recommended settings for torch movement. If torch movement occurs too soon, the plasma arc cannot penetrate the workpiece. If torch movement delays too long, the pierce-hole size can increase, which can cause the loss of the transferred arc.
- Use a lead-in distance that is approximately the same thickness as the workpiece to be pierced.
  - For example, for 50 mm (2 in.) workpiece use a 50 mm (2 in.) lead-in.
- Keep the torch above cut height until it moves away from the puddle of molten metal created by the pierce. Puddle avoidance decreases shield damage.
  - If the torch is too close to the workpiece, damage can occur to the consumables parts and torch.

- If it is difficult to pierce the workpiece because of the metal type or thickness:
  - Increase the shield pierceflow if this function is available with your CNC.

    For this function to work, the shield-pierce signal must be enabled. For information about how to use the shield-pierce signal, refer to the instruction manual that came with your CNC.

  - Use a “moving” or “flying” pierce technique, **but only if you are an experienced operator.**

    With a “moving” or “flying” pierce technique, torch motion starts immediately after arc transfer and during piercing. **Do not attempt this technique unless you are an experienced operator.** Damage to the torch, lifter, or other system components is possible.

  - Choose an argon-assist process to pierce a workpiece that is thicker than 45 mm (1.75 in.) for mild steel. Argon-assist processes are available with CorePlus, VWI, and OptiMix gas connect consoles.

Hypertherm’s shield pierceflow technology can decrease timing and torch-height problems that can have a bad effect.

Shield pierceflow technology	
Pierce delay settings	▪ The operator selects the time (in seconds) necessary to pierce through the full thickness of the workpiece. ▪ The operator uses the CNC interface or the Operate screen in the XPR web interface to enter the settings.
Shield pierceflow signal	▪ This signal starts the shield pierceflow function. ▪ This signal must start with the Plasma Start command. Refer to *Wait for start state (5)* in the instruction manual that came with your cutting system. ▪ For information about commands and signals, refer to the *CNC Communication Protocol for the XPR Cutting System* (for XPR170 and XPR300: 809810, for XPR460: 10085793).
Shield pierceflow setting	▪ This setting is used during pierce operations. ▪ This setting is active until pierce delay expires. ▪ This setting can be offset or overridden.

Recommendations for marking

- Always start with the optimized settings.
- For better results, alternate marking and cutting processes. Marking the entire nest before cutting can reduce the life of consumable parts.

Recommendations for bevel cutting

- When possible, pierce with the torch at a 90° angle to the workpiece and then tilt the torch.
- Limit tilt rotation speed if necessary.
- Maintain 2 mm – 3 mm (0.08 in. – 0.12 in.) of clearance between the torch and the workpiece.
- Use the effective thickness of the workpiece to select cut speed.

True Bevel™ technology gives you flexible and adjustable bevel-compensation cut charts or process-parameter tables that automatically compensate for torch height and cut speed.

Processes for special applications

Underwater cutting

WARNING

UNDERWATER CUTTING CAN CAUSE AN EXPLOSION

Underwater cutting with fuel gases or underwater cutting of non-ferrous alloys can cause an explosion.

- Do NOT cut under water with fuel gases (H_2-mix) or F5.
- Do NOT cut non-ferrous alloys under water or on a water table, unless you can prevent the accumulation of hydrogen gas.

Failure to remove accumulated hydrogen gas can result in an explosion during cutting system operation.

Underwater cutting can suppress the acoustical noise, smoke, and glare that plasma cutting makes.

You can expect the acoustical noise levels to average less than 70 decibels for many processes during underwater cutting of workpieces that are up to 75 mm (3 in.) below the water surface.

Underwater cutting also decreases the heat-affected zone on the workpiece. Decreased cutting speeds and a rougher cut-edge with increased dross are also possible during underwater cutting on mild steel.

Make sure to obey these conditions for underwater cutting:

- Do **not** cut under water with fuel gases (H_2-mix) or F5. An explosion can occur.
- Do **not** cut non-ferrous alloys under water or on a water table unless you have installed the correct safety equipment from your table manufacturer or cutting machine supplier.
- Before cutting non-ferrous alloys, speak with your cutting machine supplier, the table manufacturer, and other experts to make risk-assessment and risk-mitigation plans that control the risk of explosion from hydrogen accumulation.

- Do **not** cut a workpiece that is more than 75 mm (3 in.) below the surface of the water. It can have a bad effect on cutting system performance.
- Do **not** use True Hole® processes underwater. True Hole processes are not compatible with underwater cutting.

  True Hole cutting on a water table is possible only if the surface of the water is lowered to at least 25 mm (1 in.) **below the bottom surface** of the workpiece. For information about True Hole processes, contact your cutting machine supplier or regional Hypertherm Technical Service team.

- Make sure that the torch is at a 90° angle to the workpiece.
- Make sure that preflow is ON during initial height sense (IHS) for all underwater cutting.

  Use the CNC or XPR web interface to enable initial height sense (IHS). For information about how to do this, see the instruction manual that came with your CNC.

- Make sure that ohmic contact is OFF for all underwater cutting.

  For information about how to disable ohmic contact, see the instruction manual that came with your CNC.

Underwater cut charts are listed by amperage with the ferrous and stainless steel cut charts. Underwater cut chart settings are available for:

- Ferrous processes 80 A and above
- Non-fuel gas stainless steel processes 80 A and above

Mirror cutting

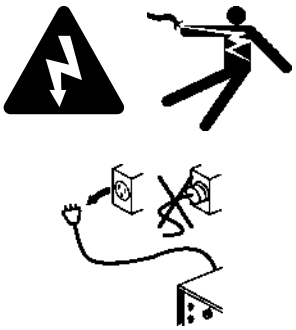
Consumable parts for mirror cutting are available for all processes. They include a specific swirl ring and shield that causes the gases to swirl in the opposite direction. When the gases swirl in the opposite direction, the “good side” of the cut is on the left side of the torch.

Consumable parts for mirror cutting are usually used to cut a “left-handed” version of a “right-handed” part. Consumable parts for mirror cutting use the same settings as the consumable parts for standard processes.

Install the consumable parts

Make sure that the consumable parts are installed correctly on the torch.

⚠ WARNING



ELECTRIC SHOCK CAN KILL

Disconnect electric power before doing installation or maintenance.

The line-disconnect switch must REMAIN in the OFF position until all of the installation or maintenance steps are complete.

Refer to the *Safety and Compliance Manual* (80669C) for more safety information.

⚠ NOTICE

A LOOSE OR OVERTIGHTENED ELECTRODE CAN CAUSE DAMAGE TO THE TORCH

If you do not correctly install and tighten the electrode, torch damage can occur.

A tool is necessary to correctly install and tighten the torch electrode. Do not use your hands. Hypertherm recommends tightening the electrode to a torque of 2.3 N·m – 2.8 N·m (20 lbf·in – 25 lbf·in).

1. Remove the power from the cutting system:
   a. Set the line-disconnect switch to the OFF position.
   b. Make sure that the power-indicator LED is not illuminated on the plasma power supply or other system components.
2. Select the best consumable parts for your cutting or marking application.
3. Apply a thin layer of silicone lubricant to each O-ring on all consumable parts.

   Make sure that the O-rings are shiny. However, too much lubricant can prevent gas flow. Remove unwanted lubricant if found.

4. Remove the torch from the torch receptacle.

5. Use a clean, lint-free cloth to clean the internal and external surfaces of the torch as shown in Figure 3.

6. Install the consumable parts on the torch as shown in Figure 4.

Figure 3 – Clean the torch surfaces

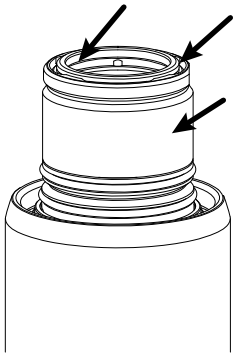
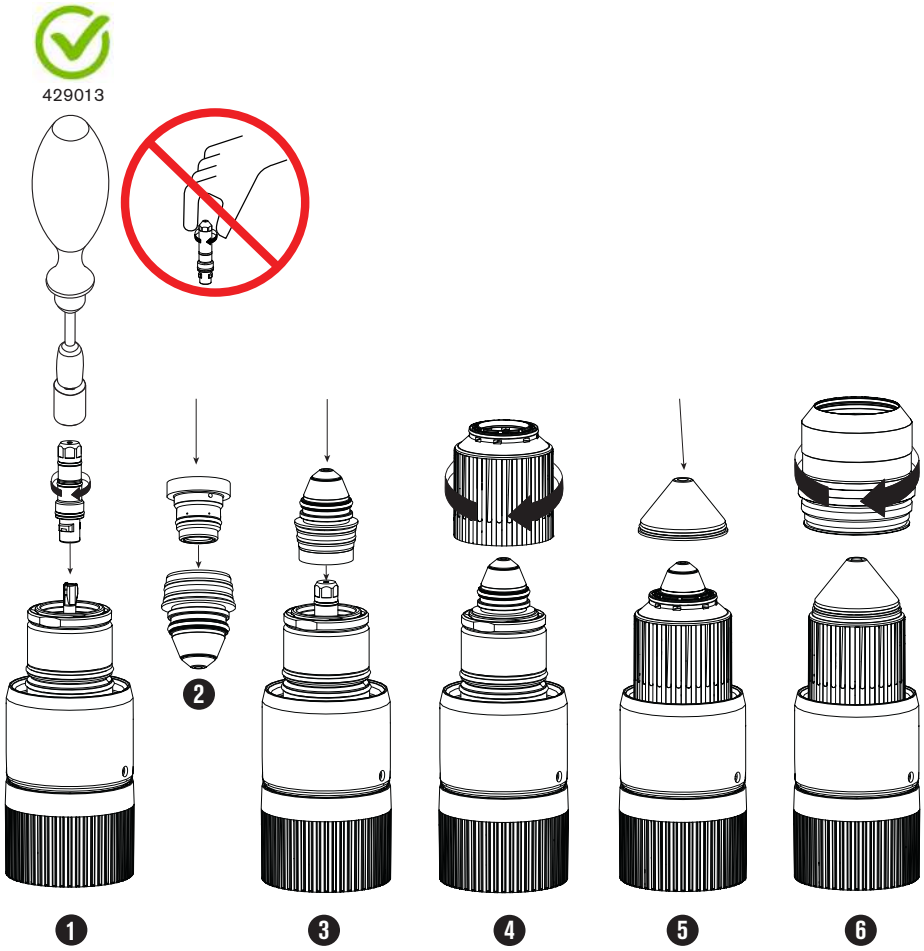


Figure 4 – Install the consumable parts on the torch

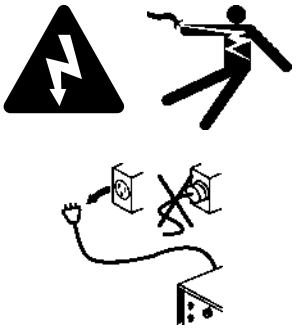


7. Install the torch in the torch receptacle. Refer to Install the torch in the torch receptacle on page 34.

Install the torch in the torch receptacle

Make sure that the torch is correctly installed in the torch receptacle.

⚠ WARNING



ELECTRIC SHOCK CAN KILL

Disconnect electric power before doing installation or maintenance.

The line-disconnect switch must REMAIN in the OFF position until all of the installation or maintenance steps are complete.

Refer to the *Safety and Compliance Manual* (80669C) for more safety information.

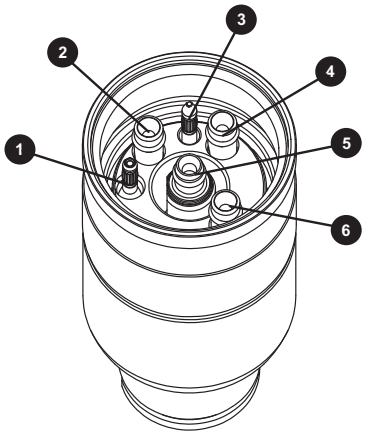
⚠ NOTICE

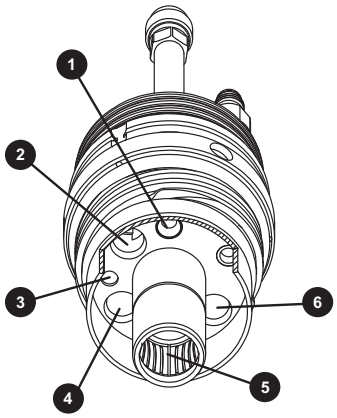
A LOOSE OR OVERTIGHTENED ELECTRODE CAN CAUSE DAMAGE TO THE TORCH

If you do not correctly install and tighten the electrode, torch damage can occur.

A tool is necessary to correctly install and tighten the torch electrode. Do not use your hands. Hypertherm recommends tightening the electrode to a torque of 2.3 N·m – 2.8 N·m (20 lbf·in – 25 lbf·in).

Figure 5 – Torch receptacle connections





1 Pilot arc

2 Coolant return

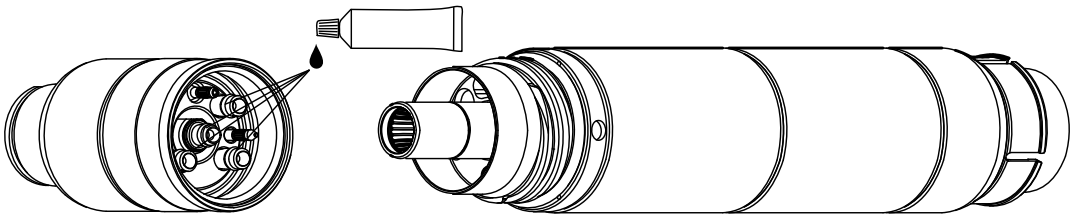
3 Ohmic

4 Shield gas

5 Coolant supply

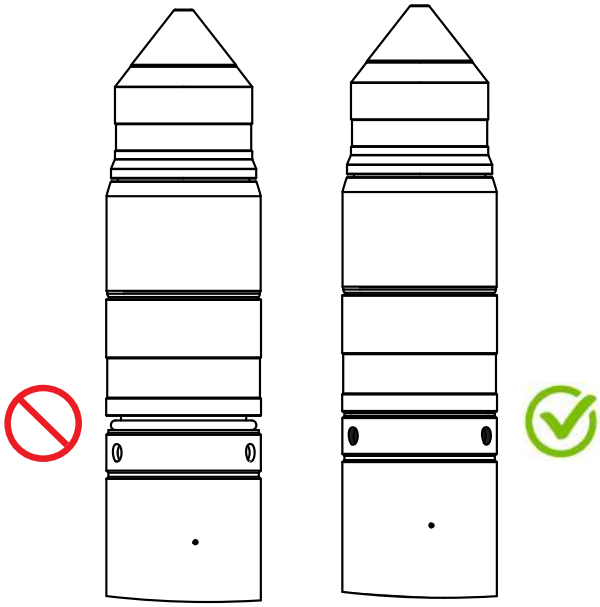
6 Plasma gas

1. Apply a thin layer of silicone lubricant to the four O-rings that are inside of the torch body. Do **not** apply silicone to the brass electrical connectors.



Make sure that the O-rings are shiny. However, too much lubricant can prevent gas flow. Remove excess lubricant if found.

2. Install the torch in the torch receptacle:
   a. Turn the torch body up with light force until you feel it engage into position in the receptacle.
   b. Use your hands to tighten the torch-coupler nut until the coupler nut cannot turn. Do **not** use tools.
3. Make sure that the torch body is fully installed in the torch receptacle. Make sure that there is no space between the torch body and torch receptacle.



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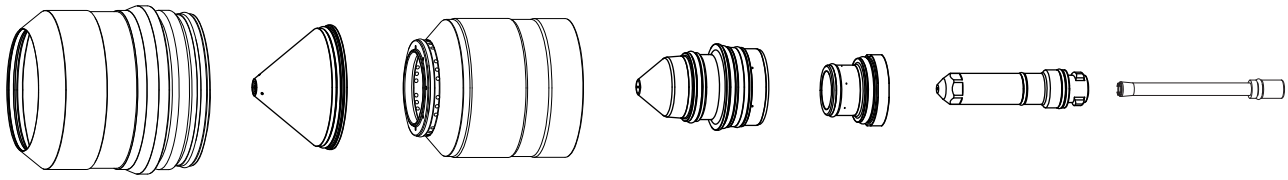
Cut charts for ferrous (mild steel) processes – above water

Mild steel – 30 A – O_2 Plasma / O_2 Shield – above water (Core™, CorePlus™, VWI™, OptiMix™)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420228	420365	420225	420407	420222	420368

Flow rate (lpm/scfh)		
	N_2	O_2
Pre flow	20 / 43	19 / 40
Pierce flow	–	38 / 80
Cut flow	–	27 / 58

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
0.5	3	1051	28	76	24	5348	106	2.54	2.54	0.1	1.27	1.5
0.8	3	1051	28	76	24	4217	107	2.54	2.54	0.2	1.27	1.5
1	3	1051	28	76	24	3604	108	2.54	2.54	0.3	1.27	1.6
1.2	3	1051	28	76	24	2847	109	2.54	2.54	0.3	1.27	1.5
1.5	3	1051	28	76	24	2198	111	2.54	2.54	0.3	1.27	1.6
2	3	1051	28	76	24	1490	116	3.05	3.05	0.4	1.52	1.7
2.5	3	1051	28	76	24	1325	116	3.05	3.05	0.4	1.52	1.7
3	1	1051	28	76	24	1153	117	3.05	3.05	0.5	1.52	1.8
4	2	1051	28	76	24	908	120	3.37	3.37	0.6	1.52	1.9
5	2	1051	28	76	24	726	123	3.88	3.88	0.7	1.52	2.0

Mild steel – 30 A – O_2 Plasma / O_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

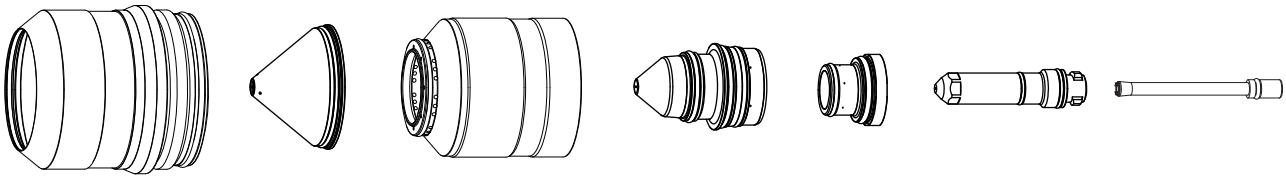
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
26 GA (0.018)	3	1051	28	76	24	215	106	0.100	0.100	0.1	0.050	0.06
24 GA (0.024)	3	1051	28	76	24	200	106	0.100	0.100	0.1	0.050	0.06
22 GA (0.030)	3	1051	28	76	24	170	107	0.100	0.100	0.2	0.050	0.06
20 GA (0.036)	3	1051	28	76	24	155	108	0.100	0.100	0.3	0.050	0.06
18 GA (0.048)	3	1051	28	76	24	110	109	0.100	0.100	0.3	0.050	0.06
16 GA (0.060)	3	1051	28	76	24	85	111	0.100	0.100	0.3	0.050	0.06
14 GA (0.075)	3	1051	28	76	24	60	116	0.120	0.120	0.4	0.060	0.07
12 GA (0.105)	3	1051	28	76	24	50	116	0.120	0.120	0.4	0.060	0.07
10 GA (0.135)	1	1051	28	76	24	40	118	0.120	0.120	0.5	0.060	0.07
3/16 (0.188)	2	1051	28	76	24	30	122	0.150	0.150	0.7	0.060	0.08

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.9 mm
English	N_2	N_2	8001	15	10	10	0.100 in.	250 in./min	118 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9010	9	90	10	2.54 mm	2540 mm/min	85 V	1.00 mm
English	Ar	Air	9010	9	90	10	0.100 in.	100 in./min	85 V	0.04 in.

Mild steel – 50 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420237	420365	420234	420233	420231	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	20 / 42	–	35 / 74
Pierce flow	20 / 42	–	35 / 74
Cut flow	–	14 / 30	32 / 68

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
2.4	3	1060	50	72	44	4354	113	3.05	3.05	0.4	1.52	1.5
2.5	3	1060	50	72	44	4262	113	3.05	3.05	0.4	1.52	1.5
3	3	1060	50	72	44	3820	113	3.05	3.05	0.5	1.52	1.5
3.5	1	1060	50	72	44	3616	112	3.05	3.05	0.5	1.52	1.5
4	1	1060	50	72	44	3144	113	3.05	3.05	0.5	1.52	1.6
5	1	1061	50	72	30	2322	115	3.05	3.05	0.5	1.52	1.7
6	2	1061	50	72	30	1919	117	4.06	4.06	0.6	2.03	1.7
7	2	1061	50	72	30	1622	119	4.06	4.06	0.6	2.03	1.8
8	2	1061	50	72	30	1369	120	4.06	4.06	0.7	2.03	1.8

Mild steel – 50 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

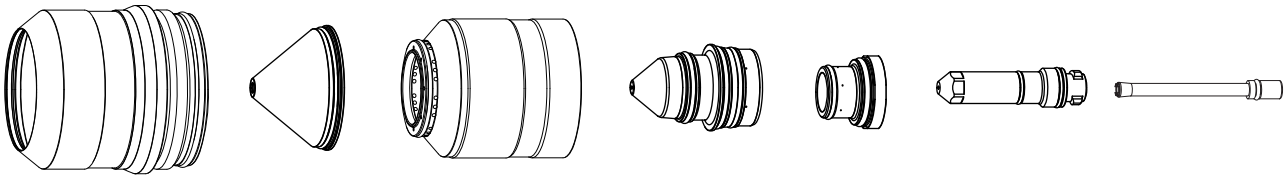
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
12 GA (0.105)	3	1060	50	72	44	155	113	0.120	0.120	0.4	0.060	0.06
10 GA (0.135)	1	1060	50	72	44	145	112	0.120	0.120	0.5	0.060	0.06
3/16 (0.188)	1	1061	50	72	30	95	114	0.120	0.120	0.5	0.060	0.07
1/4 (0.25)	2	1061	50	72	30	70	118	0.160	0.160	0.6	0.080	0.07
5/16 (0.313)	2	1061	50	72	30	55	120	0.160	0.160	0.7	0.080	0.07

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	2.0 mm
English	N_2	N_2	8001	15	10	10	0.100 in.	250 in./min	118 V	0.08 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9018	12	70	10	2.54 mm	2540 mm/min	81 V	1.3 mm
English	Ar	Air	9018	12	70	10	0.100 in.	100 in./min	81 V	0.05 in.

Mild steel – 80 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420246	420365	420243	420242	420240	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	38 / 80	–	49 / 105
Pierce flow	–	38 / 80	49 / 105
Cut flow	–	24 / 52	46 / 98

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTING						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	1001	18	82	72	5582	114	4.06	4.06	0.2	2.03	1.8
4	3	1002	18	82	68	4303	114	4.06	4.06	0.2	2.03	1.8
5	3	1002	18	82	68	3774	114	4.06	4.06	0.2	2.03	1.8
6	1	1003	18	82	56	3048	116	4.06	4.06	0.3	2.03	1.9
7	1	1003	18	82	56	2648	117	4.06	4.06	0.3	2.03	1.9
8	1	1004	18	82	52	2417	118	4.06	4.06	0.4	2.03	2.0
9	1	1004	18	82	52	2081	119	4.06	4.06	0.5	2.03	2.1
10	1	1005	18	82	46	1807	121	4.37	4.37	0.5	2.03	2.1
12	2	1005	18	82	46	1405	123	5.08	5.08	0.7	2.03	2.3

Mild steel – 80 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

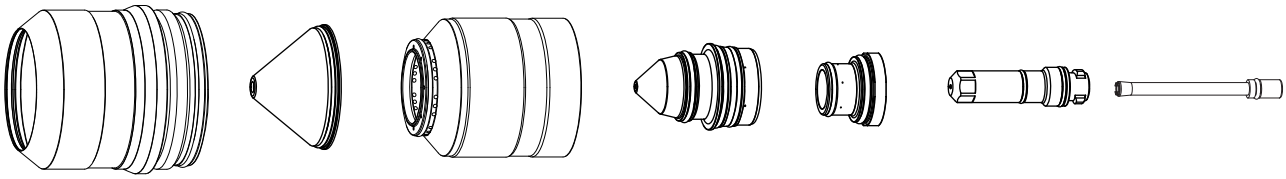
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	1001	18	82	72	180	114	0.160	0.160	0.2	0.080	0.07
3/16 (0.188)	3	1002	18	82	68	155	114	0.160	0.160	0.2	0.080	0.07
1/4 (0.25)	1	1003	18	82	56	110	117	0.160	0.160	0.3	0.080	0.07
5/16 (0.313)	1	1004	18	82	52	96	118	0.160	0.160	0.4	0.080	0.08
3/8 (0.375)	1	1005	18	82	46	75	120	0.160	0.160	0.5	0.080	0.08
1/2 (0.5)	2	1005	18	82	46	55	123	0.200	0.200	0.7	0.080	0.09

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark width
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.9 mm
English	N_2	N_2	8001	15	10	10	0.100 in.	250 in./min	118 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark width
					Plasma gas	Shield gas				
Metric	Ar	Air	9001	15	50	10	3.05 mm	2540 mm/min	78 V	1.4 mm
English	Ar	Air	9001	15	50	10	0.120 in.	100 in./min	78 V	0.06 in.

Mild steel – 130 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420255	420365	420252	420242	420249	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	33 / 69	–	85 / 180
Pierce flow	–	31 / 65	82 / 173
Cut flow	–	31 / 65	92 / 195

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltages	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	1101	37	92	45	6502	134	5.08	5.08	0.1	2.54	2.2
4	3	1101	37	92	45	5557	134	5.30	5.30	0.1	2.65	2.2
5	3	1101	37	92	45	4681	134	5.59	5.59	0.2	2.79	2.3
6	1	1102	37	92	27	4036	135	5.59	5.59	0.3	2.79	2.3
7	1	1103	37	92	82	3602	134	5.80	5.80	0.3	2.79	2.3
8	1	1103	37	92	82	3282	134	6.10	6.10	0.3	2.79	2.4
10	1	1104	37	92	77	2680	136	6.25	6.25	0.4	2.79	2.5
12	1	1105	37	92	72	2200	137	6.60	6.60	0.5	2.79	2.6
15	2	1105	37	92	72	1665	142	7.62	7.62	0.7	3.81	2.8
20	2	1105	37	92	72	1044	149	7.62	7.62	1.1	3.81	3.3
25	2	1105	37	92	72	546	162	7.62	7.62	1.7	4.03	4.0
30	4	1106	37	92	58	434	165	Edge start	Edge start	0.3	4.57	4.4
32	4	1106	37	92	58	398	165	Edge start	Edge start	0.3	4.57	4.6
38	5	1107	37	92	50	256	174	Edge start	Edge start	0.3	4.57	5.7

Mild steel – 130 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

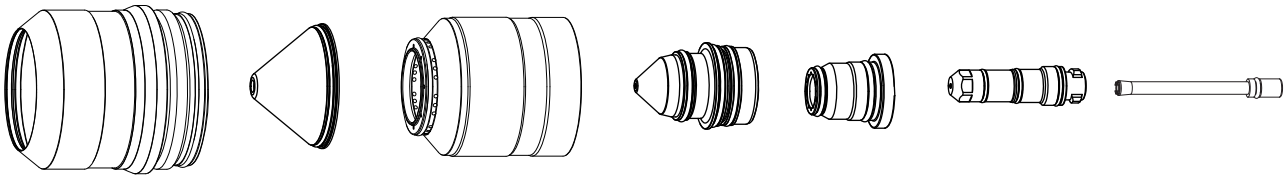
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Ker compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	1101	37	92	45	240	134	0.200	0.200	0.1	0.100	0.09
3/16 (0.188)	3	1101	37	92	45	190	134	0.220	0.220	0.2	0.110	0.09
1/4 (0.25)	1	1102	37	92	27	150	135	0.220	0.220	0.3	0.110	0.09
5/16 (0.313)	1	1103	37	92	82	130	134	0.240	0.240	0.3	0.110	0.09
3/8 (0.375)	1	1104	37	92	77	110	136	0.240	0.240	0.3	0.110	0.10
1/2 (0.5)	1	1105	37	92	72	80	138	0.260	0.260	0.5	0.110	0.10
5/8 (0.625)	2	1105	37	92	72	60	144	0.300	0.300	0.7	0.150	0.11
3/4 (0.75)	2	1105	37	92	72	45	147	0.300	0.300	1.0	0.150	0.12
1 (1)	2	1105	37	92	72	20	164	0.300	0.300	1.8	0.160	0.16
1-1/4 (1.25)	4	1106	37	92	58	16	165	Edge start	Edge start	0.3	0.180	0.18
1-1/2 (1.5)	5	1107	37	92	50	10	174	Edge start	Edge start	0.3	0.180	0.23

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.9 mm
English	N_2	N_2	8001	15	10	10	0.100 in.	250 in./min	118 V	0.07 in.

	Plasma gas	Shield gas	Process Id	Mark current	Cutflow		Marking height	Speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9001	15	50	10	3.05 mm	2540 mm/min	78 V	1.4 mm
English	Ar	Air	9001	15	50	10	0.120 in.	100 in./min	78 V	0.06 in.

Mild steel – 170 A O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420513	420365	420261	420260	420258	420368

Flow rate (lpm/scfh)				
	N_2	O_2	Air	Ar
Pre flow	23 / 49	–	78 / 165	–
Pierce flow	–	33 / 69	96 / 202	67 / 140†
Cut flow	–	32 / 69	51 / 108	–

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	1151	45	78	79	5080	126	6.60	6.60	0.3	2.79	2.7
7	3	1151	45	78	79	4768	127	6.60	6.60	0.3	2.79	2.7
8	3	1151	45	78	79	4288	128	6.60	6.60	0.3	2.79	2.7
10	1	1152	45	78	79	3461	128	6.60	6.60	0.3	2.79	2.8
12	1	1153	45	78	77	3061	129	6.60	6.60	0.5	2.79	2.6
15	1	1153	45	78	77	2277	133	8.13	8.13	0.6	4.06	2.8
20	2	1153	45	78	77	1575	138	8.13	8.13	0.8	4.06	3.3
25	2	1153	45	78	77	1175	142	10.16	10.16	1.0	4.32	3.6
30	2	1155	45	78	74	867	144	10.16	10.16	2.4	3.81	4.3
32	2	1155	45	78	74	752	145	10.16	10.16	3.0	3.81	4.6
34	2	1155	45	78	74	672	147	10.16	19.05	4.5	3.81	4.7
36†	4	1157	30	78	74	592	149	10.16	19.05	5.0	4.32	4.7
38†	4	1157	30	78	74	512	151	10.16	19.05	6.0	4.32	4.7
40†	4	1157	30	78	74	462	153	10.16	19.05	7.0	4.32	5.0
36	4	1155	45	78	74	592	149	Edge start	Edge start	0.3	4.32	4.7
38	4	1155	45	78	74	512	151	Edge start	Edge start	0.3	4.31	4.7
40	4	1155	45	78	74	462	153	Edge start	Edge start	0.3	4.32	5.0
44	4	1156	45	78	71	366	157	Edge start	Edge start	0.3	4.32	5.4

Mild steel – 170 A O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
50	5	1156	45	78	71	267	162	Edge start	Edge start	0.5	4.32	5.9
60	5	1156	45	78	71	152	170	Edge start	Edge start	0.5	4.32	6.9

† Argon assist.

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	1151	45	78	79	200	127	0.260	0.260	0.3	0.110	0.11
5/16 (0.313)	3	1151	45	78	79	170	128	0.260	0.260	0.3	0.110	0.11
3/8 (0.375)	1	1152	45	78	79	140	128	0.260	0.260	0.3	0.110	0.11
1/2 (0.5)	1	1153	45	78	77	115	129	0.260	0.260	0.5	0.110	0.10
5/8 (0.625)	1	1153	45	78	77	80	135	0.320	0.320	0.6	0.160	0.11
3/4 (0.75)	2	1153	45	78	77	65	137	0.320	0.320	0.8	0.160	0.13
1 (1)	2	1153	45	78	77	45	142	0.400	0.400	1.0	0.170	0.14
1-1/4 (1.25)	2	1155	45	78	74	30	145	0.400	0.400	3.0	0.150	0.18
1-3/8 (1.375)	2	1155	45	78	74	25	147	0.400	0.750	5.0	0.160	0.18
1-1/2† (1.5)	4	1157	30	78	74	20	151	0.400	0.750	5.0	0.170	0.19
1-9/16† (1.563)	4	1157	30	78	74	17	153	0.400	0.750	7.0	0.170	0.20
1-1/2 (1.5)	4	1155	45	78	74	20	151	Edge start	Edge start	0.3	0.170	0.19
1-3/4 (1.75)	4	1156	45	78	71	14	157	Edge start	Edge start	0.3	0.170	0.22

Mild steel – 170 A O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
2 (2)	5	1156	45	78	71	10	163	Edge start	Edge start	0.5	0.170	0.24
2-3/8 (2.375)	5	1156	45	78	71	6	170	Edge start	Edge start	0.5	0.170	0.27

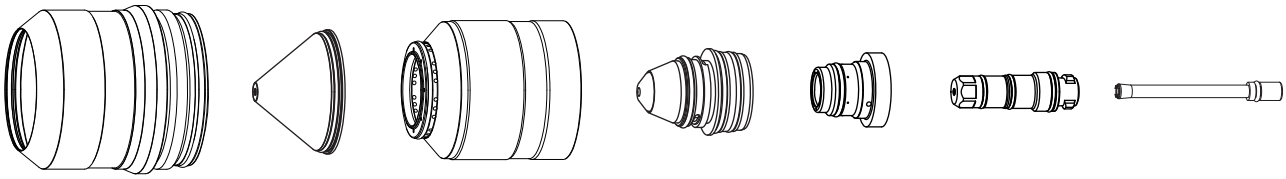
† Argon assist.

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.50 mm	6350 mm/min	121 V	2.0 mm
English	N_2	N_2	8005	18	20	15	0.100 in.	250 in./min	121 V	0.08 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark width
					Plasma gas	Shield gas				
Metric	Ar	Air	9008	18	55	15	2.50 mm	2540 mm/min	79 V	1.9 mm
English	Ar	Air	9008	18	55	15	0.100 in.	100 in./min	79 V	0.08 in.

Mild steel – 220 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420273	420365	420270	420406	420276	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	22 / 46	–	71 / 150
Pierce flow	–	49 / 103	71 / 150
Cut flow	–	103 / 103	64 / 136

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	1252	30	90	45	6096	155	9.65	9.65	0.3	3.05	2.9
7	3	1252	30	90	45	5628	155	9.65	9.65	0.3	3.05	3.0
8	3	1252	30	90	45	4908	155	9.65	9.65	0.3	3.05	3.1
10	3	1253	30	90	38	3715	154	9.65	9.65	0.3	3.05	3.2
12	1	1254	30	90	32	3315	155	9.65	9.65	0.4	3.05	3.1
15	1	1251	30	90	26	2899	155	9.65	9.65	0.5	2.79	3.2
16	1	1251	30	90	26	2769	155	9.65	9.65	0.5	2.79	3.3
20	1	1251	30	90	26	2064	158	9.65	9.65	0.8	3.05	3.5
25	2	1251	30	90	26	1564	160	9.65	9.65	1.1	3.05	3.8
30	2	1251	30	90	26	1156	167	9.65	11.68	1.7	4.57	4.3
38	2	1251	30	90	26	766	176	9.65	16.51	3.5	4.57	4.9
40	4	1255	30	90	24	686	178	Edge start	Edge start	1.5	4.57	5.0
50	4	1255	30	90	24	330	185	Edge start	Edge start	1.5	4.57	5.5
60	5	1255	30	90	24	158	189	Edge start	Edge start	1.5	4.57	6.0

Mild steel – 220 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	1252	30	90	45	240	155	0.380	0.380	0.3	0.120	0.12
3/8 (0.375)	3	1253	30	90	38	150	154	0.380	0.380	0.3	0.120	0.13
1/2 (0.5)	1	1254	30	90	32	125	155	0.380	0.380	0.4	0.110	0.12
5/8 (0.625)	1	1251	30	90	26	110	155	0.380	0.380	0.5	0.110	0.13
3/4 (0.75)	1	1251	30	90	26	85	158	0.380	0.380	0.7	0.120	0.14
7/8 (0.875)	1	1251	30	90	26	75	160	0.380	0.380	0.8	0.120	0.14
1 (1)	2	1251	30	90	26	60	160	0.380	0.380	1.1	0.120	0.15
1-1/4 (1.25)	2	1251	30	90	26	40	170	0.380	0.500	1.9	0.180	0.17
1-1/2 (1.5)	2	1251	30	90	26	30	176	0.380	0.650	3.5	0.180	0.19
1-3/4 (1.75)	4	1255	30	90	24	20	182	Edge start	Edge start	1.5	0.180	0.21
2 (2)	4	1255	30	90	24	12	185	Edge start	Edge start	1.5	0.180	0.22
2-1/4 (2.25)	5	1255	30	90	24	8	188	Edge start	Edge start	1.5	0.180	0.23
2-1/2 (2.5)	5	1255	30	90	24	6	190	Edge start	Edge start	1.5	0.180	0.25

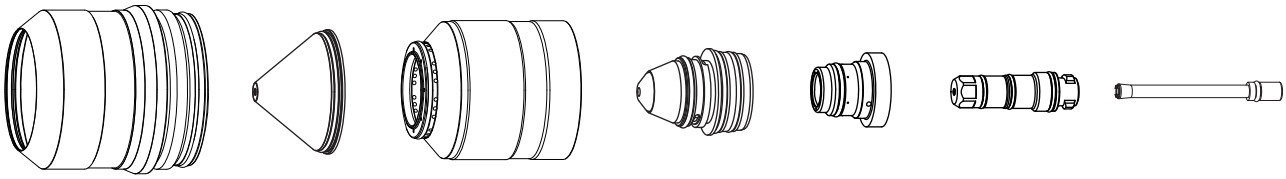
Mild steel – 220 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	Air	8007	22	10	10	3.00 mm	6350 mm/min	130 V	2.8 mm
English	N_2	Air	8007	22	10	10	0.110 in.	250 in./min	130 V	0.11 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9007	22	25	30	3.00 mm	2540 mm/min	70 V	1.8 mm
English	Ar	Air	9007	22	25	30	0.110 in.	100 in./min	70 V	0.07 in.

Mild steel – 300 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420491	420365	420279	420406	420276	420368

Flow rate (lpm/scfh)				
	N_2	O_2	Air	Ar
Pre flow	21 / 45	–	57 / 122	–
Pierce flow	–	45 / 95	57 / 122	75 / 155†
Cut flow	57 / 120*	45 / 95	73 / 154	–

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	1207	30	85	30	4500	147	9.50	9.50	0.3	3.30	3.2
12*	3	1202	30	85	22	3940	147	9.50	9.50	0.4	3.80	4.7
15	1	1201	30	90	26	3440	148	9.50	9.50	0.4	3.80	3.6
16	1	1201	30	90	26	3280	150	9.50	9.50	0.5	3.80	3.7
20	1	1201	30	90	26	2550	153	9.50	9.50	0.6	3.30	4.2
25	1	1201	30	90	26	1950	155	9.50	9.50	0.8	3.30	4.4
30	2	1203	34	90	34	1530	157	9.50	12.50	1.5	3.30	5.1
40	2	1203	34	90	34	940	166	9.50	16.50	3.2	4.50	5.8
50*†	4	1205	30	85	14	560	175	9.50	33.00	8.0	6.40	6.3
50*	4	1204	30	85	14	560	175	Edge start	Edge start	1.5	4.50	6.3
60*	4	1204	30	85	14	385	183	Edge start	Edge start	1.5	4.50	6.6
70*	5	1204	30	85	14	250	192	Edge start	Edge start	1.5	3.30	8.0
80*	5	1204	30	85	14	165	204	Edge start	Edge start	1.5	3.30	9.5

* N_2 used as shield gas.

† Argon assist.

Mild steel – 300 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	1207	30	85	30	180	147	0.380	0.380	0.3	0.130	0.13
1/2* (0.5)	3	1202	30	85	22	155	147	0.380	0.380	0.4	0.150	0.18
5/8 (0.625)	1	1201	30	90	26	130	151	0.380	0.380	0.5	0.130	0.15
3/4 (0.75)	1	1201	30	90	26	105	154	0.380	0.380	0.7	0.130	0.16
7/8 (0.875)	1	1201	30	90	26	90	154	0.380	0.380	0.7	0.130	0.19
1 (1)	1	1201	30	90	26	75	156	0.380	0.380	1.0	0.130	0.17
1-1/4 (1.25)	2	1203	34	90	34	55	163	0.380	0.500	1.8	0.180	0.20
1-1/2 (1.5)	2	1203	34	90	34	40	165	0.380	0.650	3.0	0.180	0.22
1-3/4* (1.75)	2	1204	30	85	14	30	170	0.380	0.850	4.5	0.180	0.22
2*† (2)	4	1205	30	85	14	21	175	0.380	1.300	8.0	0.250	0.24
2* (2)	4	1204	30	85	14	21	175	Edge start	Edge start	1.5	0.250	0.24
2-1/4* (2.25)	4	1204	30	85	14	17	181	Edge start	Edge start	1.5	0.180	0.26
2-1/2* (2.5)	4	1204	30	85	14	14	185	Edge start	Edge start	1.5	0.180	0.27
2-3/4* (2.75)	5	1204	30	85	14	10	192	Edge start	Edge start	1.5	0.180	0.31
3* (3)	5	1204	30	85	14	7	195	Edge start	Edge start	1.5	0.180	0.38

* N_2 used as shield gas.

† Argon assist.

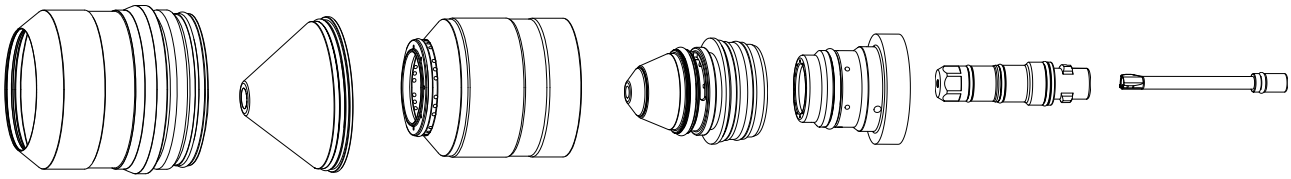
Mild steel – 300 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	Air	8007	22	10	10	3.00 mm	6350 mm/min	130 V	2.8 mm
English	N_2	Air	8007	22	10	10	0.110 in.	250 in./min	130 V	0.11 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9007	22	25	30	3.00 mm	2540 mm/min	70 V	1.8 mm
English	Ar	Air	9007	22	25	30	0.110 in.	100 in./min	70 V	0.07 in.

Mild steel – 460 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	520002	420365	520001	420819	420834	420368

Flow rate (lpm/scfh)				
	N_2	O_2	Air	Ar
Pre flow	36 / 76	–	71 / 150	–
Pierce flow	–	58 / 122	123 / 260	109 / 230
Cut flow	–	58 / 122	97 / 205	74 / 157

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
12	3	1283	55	73	44	4940	162	7.1	7.1	0.4	6.3	4.3
15	3	1283	55	73	44	4420	163	7.1	7.1	0.5	6.3	4.1
16	3	1283	55	73	44	4220	163	7.1	7.1	0.5	6.2	4.1
20	3	1282	55	73	44	3140	156	7.2	7.5	0.7	3.6	4.4
25	1	1281	55	73	44	2460	161	8.0	9.9	0.9	4.0	4.6
30	1	1281	55	73	44	2000	162	8.8	12.0	1.1	4.4	5.0
35	1	1281	55	73	44	1600	164	9.6	14.0	1.4	4.5	5.3
40	1	1281	55	73	44	1300	167	10.1	16.3	1.9	4.5	5.6
45	2	1284	55	73	44	1110	171	10.1	19.6	2.6	4.7	5.7
50	2	1285	55	64	38	850	173	10.1	25.2	3.8	6.1	6.6
55†	4	1288	55	64	38	750	176	10.1	25.4	4.6	6.6	6.6
58†	4	1288	55	64	38	690	178	10.1	25.4	4.8	7.0	6.9
60†	4	1288	55	64	38	640	180	10.1	25.4	5.1	7.4	7.1
64†	4	1288	55	64	38	540	183	10.1	25.4	7.0	8.2	7.3
65†	4	1288	55	64	38	530	184	10.1	25.4	7.2	8.2	7.3
55	4	1285	55	64	38	750	176	Edge start	Edge start	1.5	6.6	6.7
60	4	1285	55	64	38	640	180	Edge start	Edge start	2.0	7.4	7.1
65	4	1285	55	64	38	530	184	Edge start	Edge start	2.0	8.2	7.3

Mild steel – 460 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
70	4	1285	55	64	38	400	189	Edge start	Edge start	2.0	8.1	8.1
75	5	1285	55	64	38	280	195	Edge start	Edge start	2.0	8.1	8.8
80	5	1285	55	64	38	240	194	Edge start	Edge start	2.0	4.5	6.9
90	5	1285	55	64	38	170	198	Edge start	Edge start	2.0	4.5	7.1
100††	5	1289	55	64	38	100	182	Edge start	Edge start	2.0	4.5	7.7

† Argon-assisted piercing.

†† Argon-assisted cutting.

Mild steel – 460 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	1283	55	73	44	190	162	0.280	0.280	0.4	0.250	0.166
5/8 (0.625)	3	1283	55	73	44	168	163	0.280	0.280	0.5	0.250	0.160
3/4 (0.75)	3	1282	55	73	44	129	155	0.280	0.280	0.6	0.140	0.169
7/8 (0.875)	3	1282	55	73	44	112	159	0.300	0.340	0.8	0.150	0.176
1 (1)	1	1281	55	73	44	95	161	0.320	0.400	0.9	0.160	0.182
1-1/4 (1.25)	1	1281	55	73	44	73	163	0.360	0.500	1.2	0.180	0.200
1-1/2 (1.5)	1	1281	55	73	44	54	165	0.400	0.600	1.6	0.180	0.216
1-3/4 (1.75)	2	1284	55	73	44	45	171	0.400	0.750	2.5	0.180	0.225
2 (2)	2	1285	55	64	38	33	173	0.400	1.000	3.8	0.250	0.258
2-1/4 (2.25)†	4	1288	55	64	38	28	177	0.400	1.000	4.7	0.270	0.272
2-1/2 (2.5)†	4	1288	55	64	38	22	183	0.400	1.000	7.0	0.320	0.287
2-1/4 (2.25)	4	1285	55	64	38	28	177	Edge start	Edge start	1.5	0.270	0.272
2-1/2 (2.5)	4	1285	55	64	38	22	183	Edge start	Edge start	2.0	0.320	0.287
2-3/4 (2.75)	4	1285	55	64	38	16	189	Edge start	Edge start	2.0	0.320	0.319
3 (3)	5	1285	55	64	38	11	197	Edge start	Edge start	2.0	0.320	0.351

Mild steel – 460 A – O_2 Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS				
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay
				Plasma gas	Shield gas					
in.						in./min	volts	in.	in.	seconds
3-1/4 (3.25)	5	1285	55	64	38	8	196	Edge start	Edge start	2.0
3-1/2 (3.5)	5	1285	55	64	38	7	198	Edge start	Edge start	2.0
3-3/4 (3.75)†	5	1289	55	64	38	5	180	Edge start	Edge start	2.0
4 (4)††	5	1289	55	64	38	4	182	Edge start	Edge start	2.0

† Argon-assisted piercing.

†† Argon-assisted cutting.

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	Air	8010	25	10	20	2.80 mm	3800 mm/min	115 V	2.3 mm
English	N_2	Air	8010	25	10	20	0.110 in.	150 in./min	115 V	0.09 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9019	28	35	40	2.80 mm	1900 mm/min	59 V	2.5 mm
English	Ar	Air	9019	28	35	40	0.110 in.	75 in./min	59 V	0.10 in.

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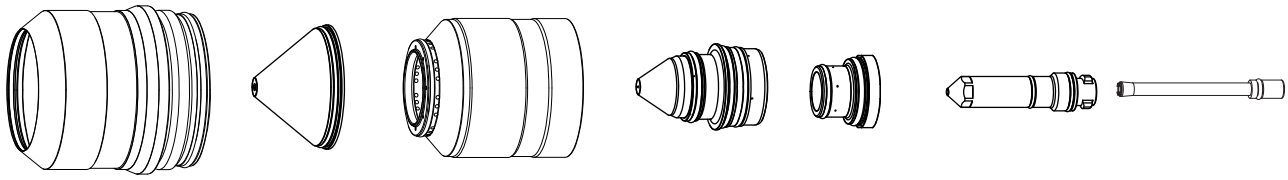
Cut charts for non-ferrous (stainless steel) processes – above water

Stainless steel – 40 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420291	420365	420288	420314	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	49 / 103
Pierce flow	57 / 120
Cut flow	71 / 152

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
0.8	3	2015	30	75	85	6100	124	5.00	5.00	0.2	3.60	1.4
1	3	2015	30	75	85	5715	124	5.00	5.00	0.2	3.50	1.3
1.2	3	2015	30	75	85	5345	124	5.00	5.00	0.2	3.40	1.3
1.5	3	2015	30	75	85	4818	122	5.00	5.00	0.2	3.30	1.2
2	3	2015	30	75	85	4014	127	5.00	5.00	0.2	3.10	1.2
2.5	1	2014	30	90	68	3302	129	5.00	5.00	0.3	2.90	1.2
3	1	2014	30	90	68	2683	130	5.00	5.00	0.3	2.80	1.3
4	2	2013	30	90	64	1724	129	5.00	5.00	0.3	2.60	1.3
5	2	2012	30	90	55	1136	129	5.00	5.00	0.3	2.50	1.3
6	2	2012	30	90	55	918	132	5.00	5.00	0.6	2.50	1.4

Stainless steel – 40 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi (continued)

English

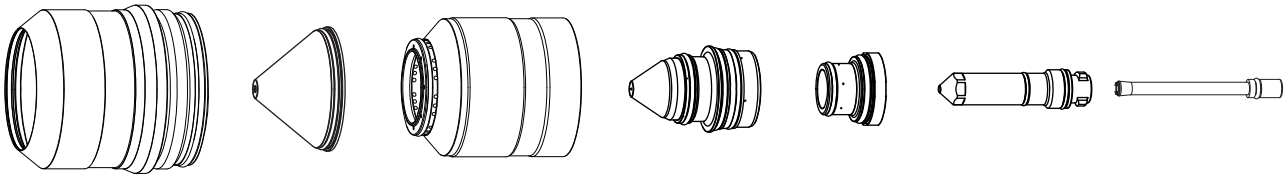
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
20 GA (0.036)	3	2015	30	75	85	240	124	0.200	0.200	0.2	0.140	0.05
18 GA (0.048)	3	2015	30	75	85	210	124	0.200	0.200	0.2	0.140	0.05
16 GA (0.06)	3	2015	30	75	85	180	122	0.200	0.200	0.2	0.120	0.05
14 GA (0.075)	3	2015	30	75	85	160	127	0.200	0.200	0.2	0.120	0.05
12 GA (0.105)	1	2014	30	90	68	120	130	0.200	0.200	0.3	0.120	0.05
10 GA (0.135)	1	2013	30	90	64	85	130	0.200	0.200	0.3	0.100	0.05
3/16 (0.1875)	2	2012	30	90	55	60	128	0.200	0.200	0.3	0.100	0.05
1/4 (0.25)	2	2012	30	90	55	32	133	0.200	0.200	0.6	0.100	0.06

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	2.1 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.08 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9002	9	90	10	2.50 mm	6350 mm/min	67 V	1.0 mm
English	Ar	N_2	9002	9	90	10	0.100 in.	150 in./min	67 V	0.04 in.

Stainless steel – 60 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420297	420323	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	48 / 102
Pierce flow	63 / 134
Cut flow	72 / 154

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
2.5	3	2026	30	82	65	3105	124	5.00	5.00	0.3	3.20	1.5
3	1	2026	30	82	65	2776	124	5.00	5.00	0.3	2.80	1.5
4	1	2026	30	82	65	2245	123	5.00	5.00	0.3	2.50	1.5
5	1	2025	30	82	55	1886	124	5.00	5.00	0.3	2.50	1.5
6	2	2024	30	82	45	1697	126	5.00	5.00	0.6	2.50	1.4

Stainless steel – 60 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi (continued)

English

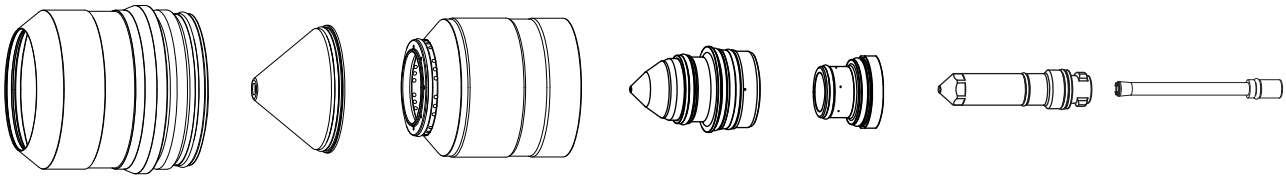
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
12 GA (0.105)	3	2026	30	82	65	120	124	0.200	0.200	0.3	0.120	0.06
10 GA (0.135)	1	2026	30	82	65	95	123	0.200	0.200	0.3	0.100	0.06
3/16 (0.1875)	1	2025	30	82	55	80	124	0.200	0.200	0.3	0.100	0.06
1/4 (0.25)	2	2024	30	82	45	65	126	0.200	0.200	0.6	0.100	0.06

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc Volt	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	1.8 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9009	11	90	10	2.50 mm	3810 mm/min	69 V	1.1 mm
English	Ar	N_2	9009	11	90	10	0.100 in.	150 in./min	69 V	0.04 in.

Stainless steel – 60 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420300	420365	420296	420323	420303	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	27 / 57	0.21 / 3*
Pierce flow	34 / 72	0.21 / 3*
Cut flow	20 / 42	0.4 / 7*

*Gallons per hour (gph)

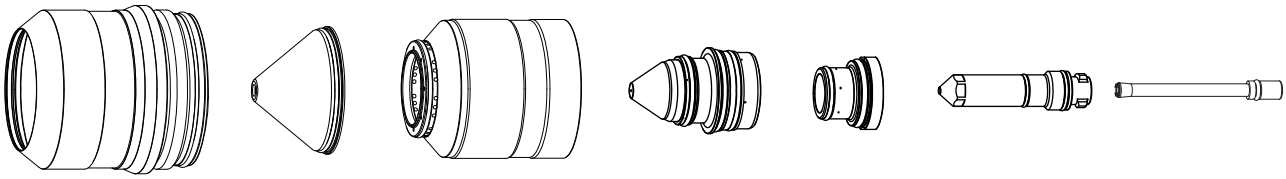
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Ker compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	1	2028	10	80	30	3065	122	5.00	5.00	0.3	2.54	1.5
4	1	2028	10	80	30	2062	126	5.00	5.00	0.3	2.00	1.6
5	1	2028	10	80	30	1516	130	5.00	5.00	0.3	2.00	1.7
6	2	2028	10	80	30	1179	132	5.00	5.00	0.6	2.50	1.9

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
12 GA (0.105)	3	2028	10	80	30	120	120	0.200	0.200	0.3	0.120	0.06
10 GA (0.135)	1	2028	10	80	30	100	124	0.200	0.200	0.3	0.100	0.06
3/16 (0.1875)	1	2028	10	80	30	80	129	0.200	0.200	0.3	0.100	0.06
1/4 (0.25)	2	2028	10	80	30	50	132	0.200	0.200	0.6	0.100	0.07
3/8 (0.375)	2	2028	10	80	30	20	144	0.200	0.200	0.8	0.120	0.09

Stainless steel – 60 A – F5 Plasma / N_2 Shield – above water (VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420297	420323	420303	420368

Flow rate (lpm/scfh)		
	F5	N_2
Pre flow	–	55 / 117
Pierce flow	40 / 84	53 / 114
Cut flow	29 / 62	88 / 188

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
2.5	3	2023	30	82	55	3177	132	5.00	5.00	0.2	3.20	1.4
3	1	2023	30	82	55	2763	132	5.00	5.00	0.3	3.10	1.4
4	1	2022	30	82	45	2217	132	5.00	5.00	0.3	3.00	1.4
5	1	2021	30	82	40	1869	132	5.00	5.00	0.5	2.90	1.4
6	2	2020	30	82	35	1626	133	5.00	5.00	0.6	2.80	1.4
7	2	2020	30	82	35	1204	133	5.00	5.00	0.6	2.60	1.4
8	2	2020	30	82	35	1048	133	5.00	5.00	0.7	2.50	1.4
10	2	2020	30	82	35	832	134	5.00	5.00	0.8	2.30	1.4

Stainless steel – 60 A – F5 Plasma / N_2 Shield – above water (VWI, OptiMix) HDi (continued)

English

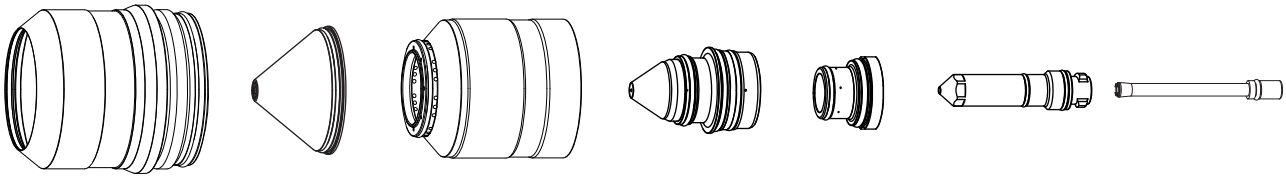
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
12 GA (0.105)	3	2023	30	82	55	120	132	0.200	0.200	0.3	0.140	0.05
10 GA (0.135)	1	2022	30	82	45	95	132	0.200	0.200	0.3	0.120	0.06
3/16 (0.1875)	1	2021	30	82	40	80	132	0.200	0.200	0.3	0.100	0.06
1/4 (0.25)	2	2020	30	82	35	60	133	0.200	0.200	0.6	0.100	0.06
5/16 (0.313)	2	2020	30	82	35	42	133	0.200	0.200	0.7	0.080	0.06
3/8 (0.375)	2	2020	30	82	35	30	133	0.200	0.200	0.8	0.080	0.06

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	1.8 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9009	11	90	10	2.50 mm	3810 mm/min	69 V	1.1 mm
English	Ar	N_2	9009	11	90	10	0.100 in.	150 in./min	69 V	0.04 in.

Stainless steel – 80 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420306	420323	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	51 / 108
Pierce flow	67 / 143
Cut flow	68 / 144

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2006	30	80	45	3820	118	5.00	5.00	0.3	2.50	1.5
4	3	2006	30	80	45	3220	118	5.00	5.00	0.3	2.50	1.6
5	3	2007	30	80	40	2692	118	5.00	5.00	0.5	2.00	1.6
6	1	2007	30	80	40	2237	116	5.00	5.00	0.5	2.00	1.5
7	1	2007	30	80	40	1853	117	5.00	5.00	0.5	2.00	1.5
8	1	2007	30	80	40	1543	118	5.00	5.00	0.6	2.00	1.6
9	1	2007	30	80	40	1304	119	5.00	5.00	0.6	2.00	1.6
10	1	2007	30	80	40	1138	121	5.00	5.00	0.6	2.00	1.6

Stainless steel – 80 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi (continued)

English

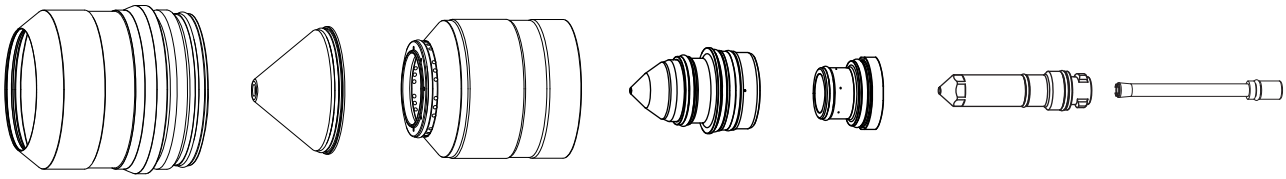
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.in.	seconds	in.	in.
10 GA (0.135)	3	2006	30	80	45	140	118	0.200	0.200	0.3	0.100	0.06
3/16 (0.1875)	3	2006	30	80	45	110	118	0.200	0.200	0.3	0.080	0.06
1/4 (0.25)	1	2007	30	80	40	84	116	0.200	0.200	0.5	0.080	0.06
5/16 (0.313)	1	2007	30	80	40	60	118	0.200	0.200	0.6	0.080	0.03
3/8 (0.375)	1	2007	30	80	40	48	120	0.200	0.200	0.6	0.080	0.06

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	1.6 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.06 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9003	11	90	10	2.50 mm	2540 mm/min	67 V	1.3 mm
English	Ar	N_2	9003	11	90	10	0.100 in.	100 in./min	67 V	0.05 in.

Stainless steel – 80 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420300	420365	420290	420323	420303	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	30 / 64	0.2 / 3*
Pierce flow	37 / 79	0.2 / 3*
Cut flow	24 / 51	0.4 / 6*

*Gallons per hour (gph)

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2010	10	80	30	3820	118	5.00	5.00	0.3	2.00	1.8
4	3	2010	10	80	30	3216	121	5.00	5.00	0.3	2.00	1.7
5	3	2010	10	80	30	2677	123	5.00	5.00	0.5	2.00	1.8
6	1	2010	10	80	30	2203	126	5.00	5.00	0.5	2.00	1.8
7	1	2010	10	80	30	1794	128	5.00	5.00	0.5	2.00	1.9
8	1	2010	10	80	30	1450	130	5.00	5.00	0.6	2.00	2.0
10	1	2010	10	80	30	956	134	5.00	5.00	0.6	2.00	2.1
12	2	2011	10	86	30	722	137	5.00	5.00	0.8	2.00	2.1

English

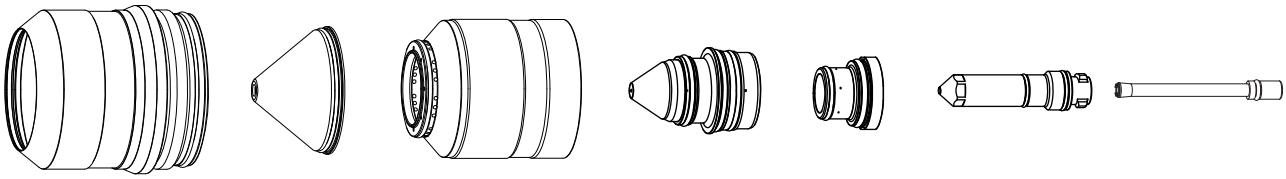
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	2010	10	80	30	140	120	0.200	0.200	0.3	0.080	0.07
3/16 (0.1875)	3	2010	10	80	30	110	123	0.200	0.200	0.3	0.080	0.07
1/4 (0.25)	1	2010	10	80	30	80	124	0.200	0.200	0.5	0.080	0.07
5/16 (0.313)	1	2010	10	80	30	60	132	0.200	0.200	0.6	0.080	0.08
3/8 (0.375)	1	2010	10	80	30	40	134	0.200	0.200	0.6	0.080	0.08

Stainless steel – 80 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) HDi (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
7/16 (0.438)	2	2010	10	80	30	31	136	0.200	0.200	0.8	0.080	0.08
1/2 (0.5)	2	2011	10	86	30	28	138	0.200	0.200	0.8	0.080	0.08

Stainless steel – 80 A – F5 Plasma / N_2 Shield – above water (VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420306	420323	420303	420368

Flow rate (lpm/scfh)		
	F5	N_2
Pre flow	–	52 / 110
Pierce flow	44 / 93	23 / 49
Cut flow	38 / 81	39 / 82

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2005	30	80	55	4248	125	5.00	5.00	0.3	3.00	1.7
4	3	2005	30	80	55	3052	123	5.00	5.00	0.3	3.00	1.7
5	3	2004	30	80	45	2362	122	5.00	5.00	0.3	2.50	1.7
6	1	2004	30	80	45	1916	124	5.00	5.00	0.5	2.50	1.7
8	1	2003	30	80	35	1376	128	5.00	5.00	0.6	2.00	1.8
10	1	2002	28	80	28	1065	134	5.00	5.00	0.6	2.00	1.7
12	2	2001	20	86	20	864	135	5.00	5.00	0.8	2.00	1.8

Stainless steel – 80 A – F5 Plasma / N_2 Shield – above water (VWI, OptiMix) HDi (continued)

English

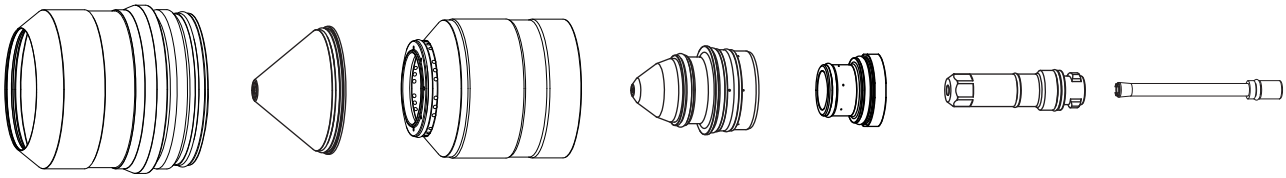
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	2005	30	80	55	140	124	0.200	0.200	0.3	0.120	0.07
3/16 (0.1875)	3	2005	30	80	55	105	122	0.200	0.200	0.3	0.100	0.07
1/4 (0.25)	1	2004	30	80	45	70	124	0.200	0.200	0.5	0.100	0.07
5/16 (0.313)	1	2003	30	80	35	55	129	0.200	0.200	0.6	0.080	0.07
3/8 (0.375)	1	2002	28	80	28	40	132	0.200	0.200	0.6	0.080	0.07
7/16 (0.438)	2	2002	28	80	28	36	135	0.200	0.200	0.8	0.080	0.07
1/2 (0.5)	2	2001	20	86	20	34	134	0.200	0.200	0.8	0.080	0.07

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/in.	120 V	1.6 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.06 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9003	11	90	10	2.50 mm	2540 mm/min	67 V	1.3 mm
English	Ar	N_2	9003	11	90	10	0.100 in.	100 in./min	67 V	0.05 in.

Stainless steel – 130 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420318	420365	420315	420314	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	92 / 195
Pierce flow	150 / 320
Cut flow	135 / 287

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2051	52	90	52	2413	167	6.10	6.10	0.4	2.54	2.3
7	3	2051	52	90	52	2257	167	6.10	6.10	0.4	2.54	2.3
8	3	2051	52	90	52	2017	168	6.10	6.10	0.5	2.54	2.4
10	1	2051	52	90	52	1613	169	6.10	6.10	0.5	2.54	2.4
12	1	2051	52	90	52	1453	170	6.10	6.10	0.6	2.54	2.4
15	2	2051	52	90	52	1029	174	6.10	6.10	0.7	3.05	2.5
20	2	2051	52	90	52	559	180	6.10	6.10	1.3	3.05	2.8

Stainless steel – 130 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi (continued)

English

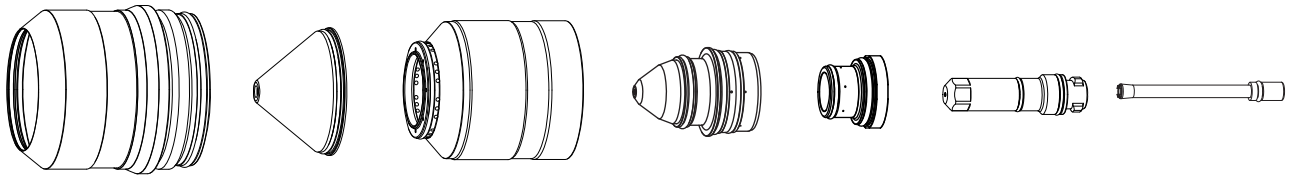
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltages	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2051	52	90	52	95	167	0.240	0.240	0.4	0.100	0.09
5/16 (0.313)	3	2051	52	90	52	80	168	0.240	0.240	0.4	0.100	0.09
3/8 (0.375)	1	2051	52	90	52	65	169	0.240	0.240	0.4	0.100	0.10
1/2 (0.5)	1	2051	52	90	52	55	170	0.240	0.240	0.6	0.100	0.09
5/8 (0.625)	2	2051	52	90	52	35	178	0.240	0.240	0.7	0.120	0.10
3/4 (0.75)	2	2051	52	90	52	25	180	0.240	0.240	1.2	0.120	0.11

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8004	18	20	15	2.50 mm	6350 mm/min	145 V	1.7 mm
English	N_2	N_2	8004	18	20	15	0.100 in.	250 in./min	145 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9004	20	65	15	2.50 mm	3810 mm/min	101 V	2.0 mm
English	Ar	N_2	9004	20	65	15	0.100 in.	150 in./min	101 V	0.08 in.

Stainless steel – 130 A – N_2 Plasma / H_2O Shield – above water (VWI and OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420469	420365	420315	420314	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	38 / 80	0.42 / 6.5*
Pierce flow	97 / 205	0.5 / 8*
Cut flow	34 / 73	0.5 / 8*

* Gallons per hour (gph)

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2052	25	90	25	2413	171	5.08	5.08	0.2	2.50	2.3
7	3	2052	25	90	25	2257	173	5.08	5.08	0.3	2.54	2.3
8	3	2052	25	90	25	2017	174	5.08	5.08	0.4	2.54	2.4
10	1	2052	25	90	25	1613	175	5.08	5.08	0.5	2.54	2.4
12	1	2052	25	90	25	1453	177	5.08	5.08	0.6	2.54	2.5
15	2	2052	25	90	25	937	182	6.35	6.35	0.7	3.05	2.8
20	2	2052	25	90	25	457	193	6.35	6.35	1.3	3.05	3.6

English

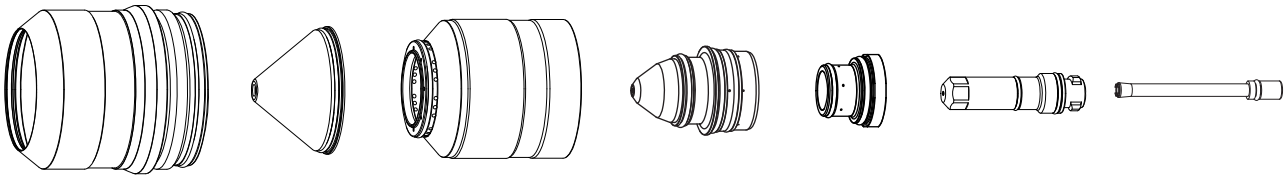
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNY SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2052	25	90	25	95	172	0.200	0.200	0.2	0.100	0.09
5/16 (0.313)	3	2052	25	90	25	80	174	0.200	0.200	0.4	0.100	0.09
3/8 (0.375)	1	2052	25	90	25	65	175	0.200	0.200	0.5	0.100	0.09
1/2 (0.5)	1	2052	25	90	25	55	177	0.200	0.200	0.6	0.100	0.10

Stainless steel – 130 A – N_2 Plasma / H_2O Shield – above water (VWI and OptiMix) HDi (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNY SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
5/8 (0.625)	2	2052	25	90	25	30	187	0.250	0.250	0.8	0.120	0.12
3/4 (0.75)	2	2052	25	90	25	20	192	0.250	0.250	1.3	0.120	0.14

Stainless steel – 130 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420318	420365	420315	420323	420356	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	103 / 220
Pierce flow	8 / 17	12 / 25	150 / 320
Cut flow	8 / 17	12 / 25	136 / 288

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
6	3	2060	52	4	12	24	52	2413	169	5.08	5.08	0.3	2.54	2.6
7	3	2060	52	4	12	24	52	1954	170	5.08	5.08	0.3	2.54	2.6
8	3	2060	52	4	12	24	52	1834	174	5.08	5.08	0.4	2.54	2.6
10	1	2053	53	6	10	24	53	1613	176	5.08	5.08	0.5	2.54	2.6
12	1	2053	53	6	10	24	53	1453	178	5.08	5.08	0.6	2.54	2.6
15	2	2061	50	8	12	20	52	1121	186	6.10	6.10	0.7	3.05	2.7
20	2	2061	50	8	12	20	52	737	191	7.62	7.62	1.5	3.81	2.9

Stainless steel – 130 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) HDi (continued)

English

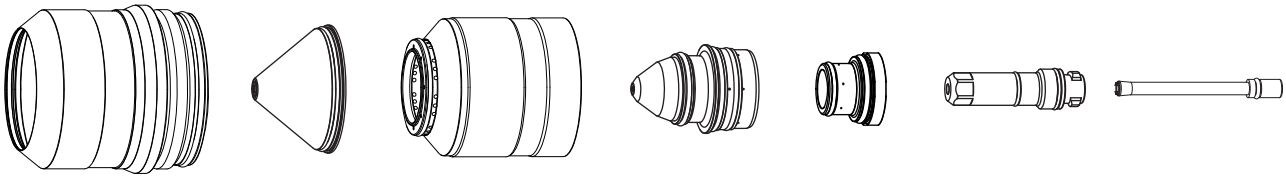
Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2060	52	9	25	50	52	80	170	0.200	0.200	0.3	0.100	0.10
5/16 (0.313)	3	2060	52	9	25	50	52	72	174	0.200	0.200	0.4	0.100	0.10
3/8 (0.375)	1	2053	53	13	21	50	53	65	176	0.200	0.200	0.5	0.100	0.10
1/2 (0.5)	1	2053	53	13	21	50	53	55	179	0.200	0.200	0.6	0.100	0.10
5/8 (0.625)	2	2061	50	17	25	42	52	40	188	0.240	0.240	0.8	0.120	0.11
3/4 (0.75)	2	2061	50	17	25	42	52	30	190	0.300	0.300	1.5	0.150	0.11

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8004	18	20	15	2.50 mm	6350 mm/min	145 V	1.7 mm
English	N_2	N_2	8004	18	20	15	0.100 in.	250 in./min	145 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9004	20	65	15	2.50 mm	3810 mm/min	101 V	2.0 mm
English	Ar	N_2	9004	20	65	15	0.100 in.	150 in./min	101 V	0.08 in.

Stainless steel – 170 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420327	420365	420324	420314	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	99 / 210
Pierce flow	168 / 355
Cut flow	151 / 322

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2057	54	90	54	1994	165	6.10	6.10	0.3	2.54	2.7
12	1	2057	54	90	54	1834	165	6.10	6.10	0.4	2.54	2.6
15	1	2057	54	90	54	1226	168	6.10	6.10	0.6	2.54	2.8
20	2	2057	54	90	54	705	177	7.62	7.62	2.5	3.43	3.1
25	4	2057	54	90	54	405	189	Edge start	Edge start	0.5	3.81	3.6
30	4	2057	54	90	54	289	194	Edge start	Edge start	0.5	3.81	3.6

Stainless steel – 170 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) HDi (continued)

English

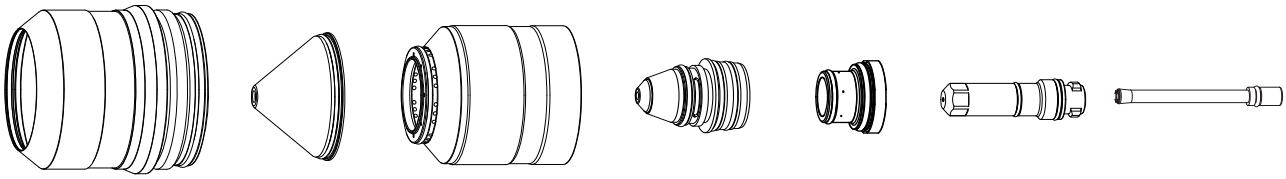
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.37)	3	2057	54	90	54	80	165	0.240	0.240	0.3	0.100	0.11
1/2 (0.5)	1	2057	54	90	54	70	165	0.240	0.240	0.4	0.100	0.10
5/8 (0.625)	1	2057	54	90	54	40	169	0.240	0.240	0.7	0.100	0.11
3/4 (0.75)	2	2057	54	90	54	30	175	0.300	0.300	2.5	0.120	0.12
1 (1)	4	2057	54	90	54	15	190	Edge start	Edge start	0.5	0.150	0.14
1-1/4 (1.25)	4	2057	54	90	54	10	196	Edge start	Edge start	0.7	0.150	0.14

Marking

	Plasma gas	Shield gas	Process ID	Mark Current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.50 mm	6350 mm/min	121 V	2.0 mm
English	N_2	N_2	8005	18	20	15	0.100 in.	250 in./min	121 V	0.08 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9005	18	55	15	2.50 mm	3810 mm/min	96 V	1.8 mm
English	Ar	N_2	9005	18	55	15	0.100 in.	150 in./min	96 V	0.07 in.

Stainless steel – 170 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420472	420365	420324	420314	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	19 / 40	0.4 / 6*
Pierce flow	47 / 100	0.5 / 8*
Cut flow	33 / 71	0.4 / 7

* Gallons per hour (gph)

Metric

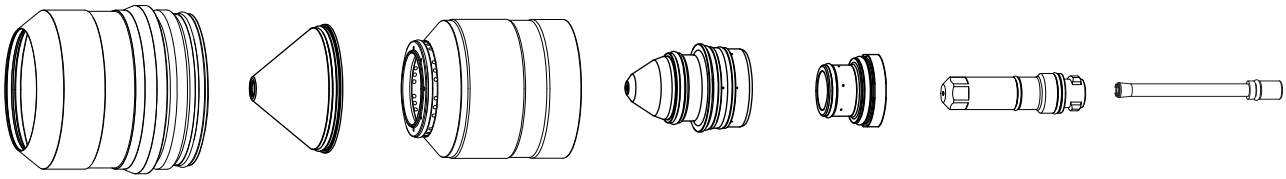
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2058	30	90	30	1975	168	5.08	5.08	0.4	2.54	2.8
12	1	2058	30	90	30	1735	172	5.08	5.08	0.5	2.54	2.8
15	1	2058	30	90	30	1375	170	5.08	5.08	0.5	2.54	2.9
20	2	2058	30	90	30	978	174	7.62	7.62	1.3	2.54	3.2
25	4	2058	30	90	30	778	183	Edge start	Edge start	0.5	3.05	4.1
30	4	2058	30	90	30	633	189	Edge start	Edge start	0.7	3.81	4.4
32	4	2058	30	90	30	578	191	Edge start	Edge start	0.8	3.81	4.5
38	4	2058	30	90	30	434	195	Edge start	Edge start	1.0	3.81	4.7

Stainless steel – 170 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) HDi (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	2058	30	90	30	80	167	0.200	0.200	0.40	0.100	0.11
1/2 (0.5)	1	2058	30	90	30	65	173	0.200	0.200	0.50	0.100	0.11
5/8 (0.625)	1	2058	30	90	30	50	169	0.200	0.200	0.50	0.100	0.12
3/4 (0.75)	2	2058	30	90	30	40	172	0.300	0.300	0.50	0.100	0.12
1 (1)	4	2058	30	90	30	30	184	Edge start	Edge start	0.80	0.120	0.16
1-1/4 (1.25)	4	2058	30	90	30	23	191	Edge start	Edge start	0.80	0.150	0.18
1-1/2 (1.5)	4	2058	30	90	30	17	195	Edge start	Edge start	1.0	0.150	0.18

Stainless steel – 170 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) HDi



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420327	420365	420324	420323	420356	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	101 / 215
Pierce flow	8 / 17	12 / 25	162 / 345
Cut flow	8 / 17	12 / 25	154 / 327

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
10	3	2059	54	6	8	26	54	1975	169	5.08	5.08	0.4	2.54	2.9
12	1	2059	54	6	8	26	54	1735	174	5.08	5.08	0.5	2.54	2.9
15	1	2059	54	6	8	26	54	1375	174	5.08	5.08	0.5	2.54	2.9
20	2	2062	54	6	10	24	54	940	183	7.62	7.62	1.4	2.54	3.6
25	4	2063	54	8	6	26	54	540	192	Edge start	Edge start	0.5	3.05	4.0
30	4	2064	54	8	12	20	54	398	198	Edge start	Edge start	0.5	4.57	4.2
32	4	2064	54	8	12	20	54	352	200	Edge start	Edge start	0.5	4.57	4.4
38	4	2064	54	8	12	20	54	256	206	Edge start	Edge start	0.5	4.57	4.7

Stainless steel – 170 A – Mixed-fuel gas Plasma / N_2 Shield (OptiMix) HDi (continued)

English

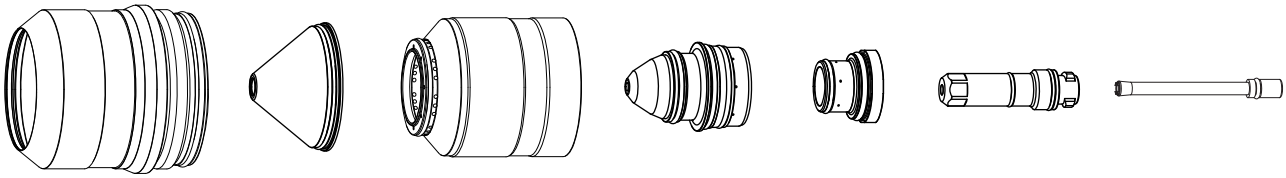
Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	2059	54	6	8	26	54	80	168	0.200	0.200	0.4	0.100	0.12
1/2 (0.5)	1	2059	54	6	8	26	5454	65	176	0.200	0.200	0.5	0.100	0.11
5/8 (0.625)	1	2059	54	6	8	26	54	50	177	0.200	0.200	0.5	0.100	0.12
3/4 (0.75)	2	2062	54	6	10	24	54	40	181	0.300	0.300	1.0	0.100	0.14
1 (1)	4	2063	54	8	6	26	54	20	193	Edge start	Edge start	0.5	0.120	0.16
1-1/8 (1.125)	4	2063	54	8	6	26	54	17	196	Edge start	Edge start	0.5	0.150	0.16
1-1/4 (1.25)	4	2064	54	8	12	26	54	14	200	Edge start	Edge start	0.5	0.180	0.17
1-1/2 (1.5)	4	2064	54	8	12	20	54	10	206	Edge start	Edge start	0.5	0.180	0.19

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.50 mm	6350 mm/min	121 V	2.0 mm
English	N_2	N_2	8005	18	20	15	0.100 in.	250 in./min	121 V	0.08 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9005	18	55	15	2.50 mm	3810 mm/min	96 V	1.8 mm
English	Ar	N_2	9005	18	55	15	0.100 in.	150 in./min	96 V	0.07 in.

Stainless steel – 300 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420362	420365	420359	420323	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	106 / 225
Pierce flow	181 / 385
Cut flow	178 / 370

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2054	54	90	54	2997	168	7.62	7.62	0.4	4.32	3.1
15	3	2054	54	90	54	2666	168	7.62	7.62	0.5	4.32	3.1
20	1	2054	54	90	54	1829	172	7.62	7.62	0.9	5.08	3.5
25	1	2054	54	90	54	1429	177	7.62	12.70	1.5	5.08	3.4
30	2	2054	54	90	54	1084	180	7.62	15.24	2.0	5.08	4.0
32	2	2054	54	90	54	947	182	7.62	15.24	2.2	5.08	4.2
38	4	2100	54	90	58	515	194	Edge start	Edge start	0.8	5.08	4.2
40	4	2100	54	90	58	455	196	Edge start	Edge start	0.8	5.08	4.1
44	4	2100	54	90	58	343	201	Edge start	Edge start	0.9	6.35	3.9
50	5	2100	54	90	58	264	204	Edge start	Edge start	1.0	6.35	6.0

Stainless steel – 300 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

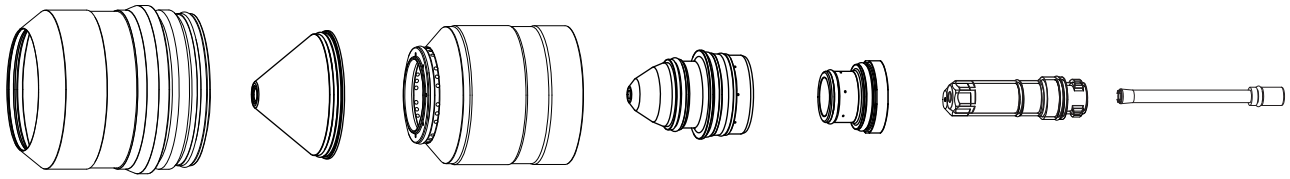
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	2054	54	90	54	118	168	0.300	0.300	0.4	0.170	0.12
5/8 (0.625)	3	2054	54	90	54	100	168	0.300	0.300	0.5	0.170	0.12
3/4 (0.75)	1	2054	54	90	54	75	171	0.300	0.300	0.8	0.200	0.14
1 (1)	1	2054	54	90	54	55	177	0.300	0.500	1.5	0.200	0.14
1-1/4 (1.25)	2	2054	54	90	54	38	181	0.300	0.600	2.2	0.200	0.17
1-1/2 (1.5)	4	2100	54	90	58	20	194	Edge start	Edge start	0.5	0.200	0.17
1-3/4 (1.75)	4	2100	54	90	58	13	201	Edge start	Edge start	0.8	0.250	0.15
2 (2)	5	2100	54	90	58	10	205	Edge start	Edge start	1.0	0.250	0.25

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8006	18	25	15	2.50 mm	2540 mm/min	135 V	1.5 mm
English	N_2	N_2	8006	18	25	15	0.100 in.	100 in./min	135 V	0.06 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9006	22	55	15	2.50 mm	2540 mm/min	92 V	2.8 mm
English	Ar	N_2	9006	22	55	15	0.100 in.	100 in./min	92 V	0.11 in

Stainless steel – 300 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420475	420365	420359	420323	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	31 / 65	0.42 / 6.5*
Pierce flow	75 / 160	0.5 / 8*
Cut flow	59 / 126	0.5 / 8

* Gallons per hour (gph)

Metric

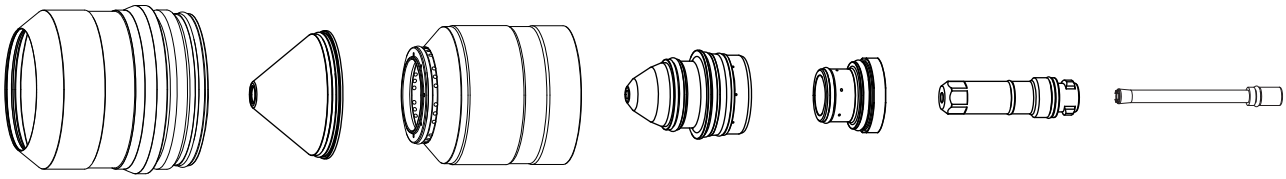
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2055	22	90	22	2159	174	7.62	7.62	0.5	3.81	3.5
15	3	2055	22	90	22	1975	175	7.62	7.62	0.9	3.81	3.5
20	1	2055	22	90	22	1702	180	7.62	7.62	1.0	5.08	4.0
25	1	2055	22	90	22	1302	183	7.62	7.62	1.2	5.08	4.2
30	2	2055	22	90	22	994	189	7.62	15.24	1.9	5.08	4.6
32	2	2055	22	90	22	879	191	7.62	15.24	2.0	5.08	4.8
38	2	2055	22	90	22	639	201	7.62	17.78	3.5	6.35	5.4
40	4	2055	22	90	22	612	202	Edge start	Edge start	0.5	6.35	5.4
44	4	2055	22	90	22	564	203	Edge start	Edge start	0.6	6.35	5.4
50	4	2055	22	90	22	403	210	Edge start	Edge start	1.0	6.35	5.7

Stainless steel – 300 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	2055	22	90	22	85	174	0.300	0.300	0.5	0.150	0.14
5/8 (0.625)	3	2055	22	90	22	75	176	0.300	0.300	1.0	0.150	0.14
3/4 (0.75)	1	2055	22	90	22	70	180	0.300	0.300	1.0	0.200	0.15
1 (1)	1	2055	22	90	22	50	183	0.300	0.300	1.2	0.200	0.17
1-1/4 (1.25)	2	2055	22	90	22	35	191	0.300	0.600	2.0	0.200	0.19
1-1/2 (1.5)	2	2055	22	90	22	25	201	0.300	0.700	3.5	0.250	0.21
1-3/4 (1.75)	4	2055	22	90	22	22	203	Edge start	Edge start	0.5	0.250	0.21
2 (2)	4	2055	22	90	22	15	211	Edge start	Edge start	1.0	0.250	0.23

Stainless steel – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420362	420365	420359	420358	420356	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	118 / 250
Pierce flow	24 / 51	48 / 102	150 / 320
Cut flow	23 / 50	47 / 101	134 / 288

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
12	3	2065	54	18	24	18	54	2032	171	8.89	8.89	0.4	5.08	4.3
15	3	2065	54	18	24	18	54	1848	172	8.89	8.89	0.6	5.08	4.3
20	1	2056	54	24	21	15	54	1340	186	8.89	8.89	0.9	5.08	4.6
25	1	2056	54	24	21	15	54	1040	187	8.89	8.89	1.2	5.08	4.7
30	2	2056	54	24	21	15	54	924	188	8.89	15.24	2.5	5.08	5.0
38	2	2065	54	18	24	18	54	639	190	8.89	17.78	3.5	5.08	4.8
40	4	2065	54	18	24	18	54	597	185	Edge start	Edge start	0.8	5.08	4.7
50	4	2066	54	12	48	0	54	441	180	Edge start	Edge start	0.9	6.35	5.4
60	4	2066	54	12	48	0	54	289	184	Edge start	Edge start	0.9	6.35	4.6
70	5	2066	54	12	48	0	54	202	193	Edge start	Edge start	1.3	6.35	4.7

Stainless steel – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
in.														
1/2 (0.5)	3	2065	54	18	24	18	54	80	171	0.350	0.350	0.4	0.200	0.17
5/8 (0.625)	3	2065	54	18	24	18	54	70	173	0.350	0.350	0.7	0.200	0.17
3/4 (0.75)	1	2056	54	24	21	15	54	55	186	0.350	0.350	0.8	0.200	0.18
1 (1)	1	2056	54	24	21	15	54	40	187	0.350	0.350	1.2	0.200	0.19
1-1/4 (1.25)	2	2056	54	24	21	15	54	35	189	0.350	0.600	2.8	0.200	0.20
1-1/2 (1.5)	2	2065	54	18	24	18	54	25	190	0.350	0.700	3.5	0.200	0.19
1-3/4 (1.75)	4	2066	54	12	48	0	54	20	172	Edge start	Edge start	0.8	0.200	0.17
2 (2)	4	2066	54	12	48	0	54	17	181	Edge start	Edge start	0.8	0.250	0.22
2-1/4 (2.25)	4	2066	54	12	48	0	54	12	183	Edge start	Edge start	0.9	0.250	0.19
2-1/2 (2.5)	5	2066	54	12	48	0	54	10	185	Edge start	Edge start	1.0	0.250	0.17
2-3/4 (2.75)	5	2066	54	12	48	0	54	8	192	Edge start	Edge start	1.2	0.250	0.18
3 (3)	5	2066	54	12	48	0	54	6	200	Edge start	Edge start	1.5	0.250	0.20

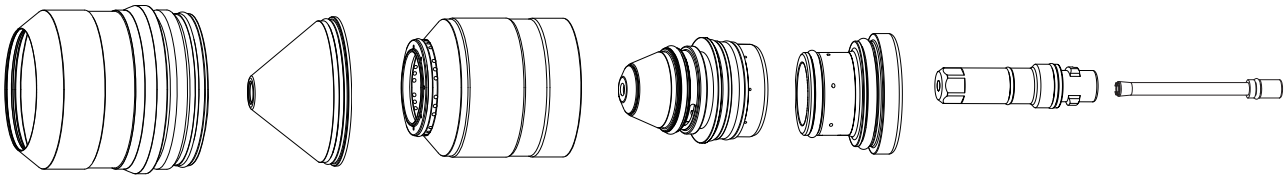
Stainless steel – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc Volt	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8006	18	25	15	2.50 mm	2540 mm/min	135 V	1.5 mm
English	N_2	N_2	8006	18	25	15	0.100 in.	100 in./min	135 V	0.06 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9006	22	55	15	2.50 mm	2540 mm/min	92 V	2.8 mm
English	Ar	N_2	9006	22	55	15	0.100 in.	100 in./min	92 V	0.11 in.

Stainless steel – 460 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420998	420365	420996	420358	420997	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	151 / 320
Pierce flow	31 / 66	179 / 380	160 / 339
Cut flow	31 / 66	162 / 343	160 / 339

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
16	3	2073	54	27	26	22	55	2322	181	14.2	17.8	0.4	5.1	5.1
20	3	2073	54	27	26	22	55	1857	183	14.2	17.8	0.8	5.1	5.1
25	3	2071	54	28	28	19	55	1381	201	14.2	17.8	1.0	8.9	6.0
30	1	2071	54	28	28	19	55	1162	205	14.2	17.8	1.2	8.9	6.0
35	1	2071	54	28	28	19	55	1040	207	14.2	17.8	1.5	8.9	6.0
38	1	2071	54	28	28	19	55	968	208	14.2	17.8	1.6	8.9	6.0
40†	2	2072	54	31	31	13	55	920	205	14.2	21.6	1.7	10.2	6.0
45†	2	2072	54	31	31	13	55	800	210	14.2	21.6	1.8	10.2	6.1
50†	2	2072	54	31	31	13	55	680	218	14.2	21.6	2.1	11.4	6.4
55†	4	2074	60	26	49	0	55	627	210	14.2	31.8	2.7	12.7	6.9
60†	4	2074	60	26	49	0	55	587	212	14.2	31.8	3.4	12.7	6.9
70†	4	2074	60	26	49	0	55	454	208	Edge start	Edge start	1.0	10.2	5.8
75	5	2075	55	25	45	0	55	334	215	Edge start	Edge start	1.0	10.2	7.7
80	5	2075	55	25	45	0	55	244	219	Edge start	Edge start	1.0	7.6	4.6
90	5	2075	55	25	45	0	55	148	227	Edge start	Edge start	3.2	7.6	4.9

Stainless steel – 460 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
95††	5	2076	54	25	35	10	55	128	212	Edge start	Edge start	3.5	7.6	5.1
130††	5	2076	54	25	35	10	55	76	238	Edge start	Edge start	5.0	7.6	5.6

† Argon-assisted piercing or edge start.

†† Argon-assisted cutting.

English

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
5/8 (0.625)	3	2073	54	27	26	22	55	92	181	0.560	0.700	0.4	0.200	0.202
3/4 (0.75)	3	2073	54	27	26	22	55	77	183	0.560	0.700	0.7	0.200	0.202
1 (1)	3	2071	54	28	28	19	55	53	203	0.560	0.700	1.0	0.350	0.234
1-1/4 (1.25)	1	2071	54	28	28	19	55	43	206	0.560	0.700	1.3	0.350	0.238
1-1/2 (1.5)	1	2071	54	28	28	19	55	38	208	0.560	0.700	1.6	0.350	0.236
1-3/4 (1.75)†	2	2072	54	31	31	13	55	32	209	0.560	0.850	1.8	0.400	0.237
2 (2)†	2	2072	54	31	31	13	55	26	219	0.560	0.850	2.1	0.450	0.253
2-1/2 (2.5)†	4	2074	60	26	49	0	55	21	214	0.560	1.250	4.5	0.500	0.275
2-3/4 2.750†	4	2074	60	26	49	0	55	18	208	Edge start	Edge start	1.0	0.400	0.230
3 (3)	5	2075	55	25	45	0	55	12	216	Edge start	Edge start	1.0	0.400	0.303

Stainless steel – 460 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
3-1/2 (3.5)	5	2075	55	25	45	0	55	6	227	Edge start	Edge start	3.0	0.300	0.190
3-3/4 (3.75)††	5	2076	54	25	35	10	55	5	211	Edge start	Edge start	3.5	0.300	0.200
4 (4)††	5	2076	54	25	35	10	55	5	216	Edge start	Edge start	4.0	0.300	0.200
4-1/2 (4.5)††	5	2076	54	25	35	10	55	4	226	Edge start	Edge start	4.5	0.300	0.210
5 (5)††	5	2076	54	25	35	10	55	3	236	Edge start	Edge start	5.0	0.300	0.220

† Argon-assisted piercing or edge start.

†† Argon-assisted cutting.

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8011	25	25	40	2.54 mm	2540 mm/min	94 V	1.45 mm
English	N_2	N_2	8011	25	25	40	0.1 in.	100 in./min	94 V	0.057 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9020	30	55	40	2.54 mm	2540 mm/min	55 V	2.6 mm
English	Ar	N_2	9020	30	55	40	0.1 in.	100 in./min	55 V	0.10 in.

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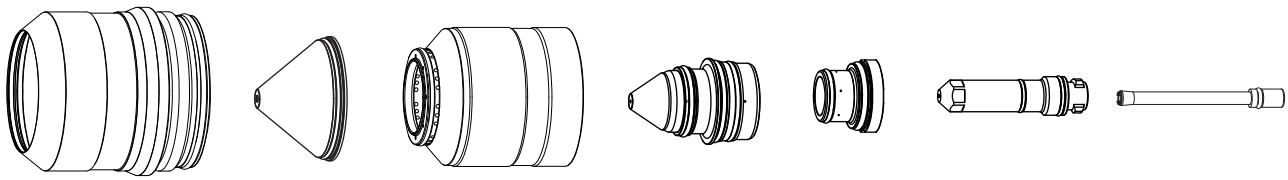
Cut charts for non-ferrous (aluminum) processes – above water

Aluminum – 40 A – Air Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420291	420365	420288	420314	420294	420368

Flow rate (lpm/scfh)		
	N_2	Air
Pre flow	17 / 35	32 / 67
Pierce flow	–	54 / 115
Cut flow	–	66 / 141

Metric

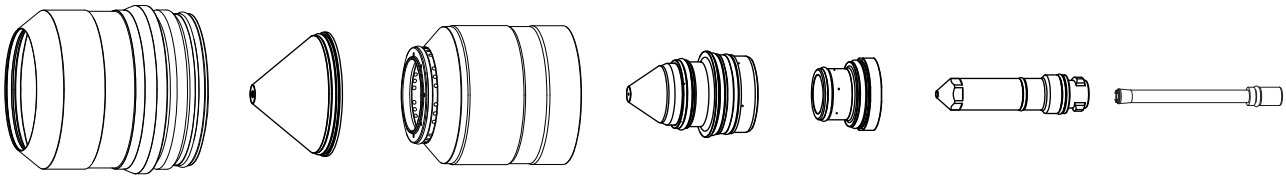
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
1.5	3	2019	30	90	85	4799	137	5.00	5.00	0.2	3.00	1.5
2	3	2019	30	90	85	3964	135	5.00	5.00	0.2	3.00	1.4
2.5	1	2018	30	90	68	3230	133	5.00	5.00	0.3	3.00	1.3
3	1	2018	30	90	68	2596	132	5.00	5.00	0.3	2.70	1.3
4	2	2017	30	90	64	1632	131	5.00	5.00	0.3	2.50	1.2
5	2	2016	30	90	55	1070	131	5.00	5.00	0.3	2.50	1.3
6	2	2016	30	90	55	911	135	5.00	5.00	0.6	2.50	1.4

Aluminum – 40 A – Air Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
20 GA (0.036)	3	2019	30	90	85	240	137	0.200	0.200	0.2	0.120	0.06
16 GA (0.051)	3	2019	30	90	85	210	137	0.200	0.200	0.2	0.120	0.06
14 GA (0.064)	3	2019	30	90	85	180	137	0.200	0.200	0.2	0.120	0.07
12 GA (0.081)	3	2019	30	90	85	160	135	0.200	0.200	0.2	0.120	0.05
10 GA (0.102)	1	2018	30	90	68	120	132	0.200	0.200	0.3	0.120	0.05
1/8 (0.125)	1	2017	30	90	64	85	132	0.200	0.200	0.3	0.100	0.05
3/16 (0.1875)	2	2016	30	90	55	60	130	0.200	0.200	0.3	0.100	0.05
1/4 (0.25)	2	2016	30	90	55	32	137	0.200	0.200	0.6	0.100	0.06

Aluminum – 40 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420291	420365	420288	420314	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	49 / 103
Pierce flow	57 / 120
Cut flow	71 / 152

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Plasma gas		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
1.5	3	2015	30	75	85	4781	131	5.00	5.00	0.2	3.00	1.3
2	3	2015	30	75	85	3494	132	5.00	5.00	0.2	3.00	1.3
2.5	1	2014	30	90	68	2740	132	5.00	5.00	0.3	3.00	1.3
3	1	2014	30	90	68	2246	131	5.00	5.00	0.3	2.70	1.3
4	2	2013	30	90	64	1641	130	5.00	5.00	0.3	2.50	1.2
5	2	2012	30	90	55	1287	131	5.00	5.00	0.3	2.50	1.2
6	2	2012	30	90	55	1055	137	5.00	5.00	0.6	2.50	1.3

Aluminum – 40 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

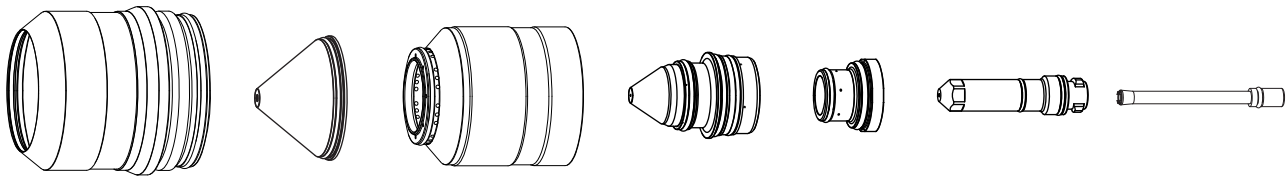
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
16 GA (0.051)	3	2015	30	75	85	210	130	0.200	0.200	0.2	0.120	0.05
14 GA (0.064)	3	2015	30	75	85	180	131	0.200	0.200	0.2	0.120	0.05
12 GA (0.081)	3	2015	30	75	85	144	132	0.200	0.200	0.2	0.120	0.05
10 GA (0.102)	1	2014	30	90	68	120	132	0.200	0.200	0.3	0.120	0.05
1/8 (0.125)	1	2013	30	90	64	85	130	0.200	0.200	0.3	0.100	0.05
3/16 (0.1875)	2	2012	30	90	55	60	130	0.200	0.200	0.3	0.100	0.05
1/4 (0.25)	2	2012	30	90	55	32	139	0.200	0.200	0.6	0.100	0.05

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	2.1 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.08 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9011	12	90	10	2.50 mm	2540 mm/min	76 V	0.8 mm
English	Ar	N_2	9011	12	90	10	0.100 in.	100 in./min	76 V	0.03 in.

Aluminum – 60 A – Air Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420297	420323	420294	420368

Flow rate (lpm/scfh)		
	N_2	Air
Pre flow	24 / 51	24 / 50
Pierce flow	–	91 / 193
Cut flow	–	56 / 120

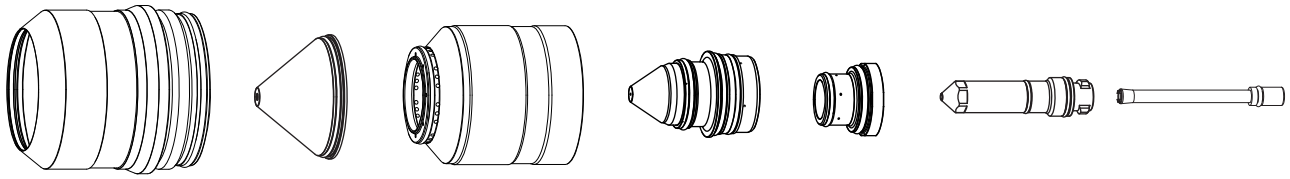
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	1	2027	30	80	45	2688	130	5.00	5.00	0.3	2.50	1.7
4	1	2027	30	80	45	2229	130	5.00	5.00	0.3	2.50	1.6
5	1	2027	30	80	45	1928	131	5.00	5.00	0.3	2.50	1.6
6	2	2027	30	80	45	1713	131	5.00	5.00	0.3	2.50	1.5

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.102)	3	2027	30	80	45	120	130	0.200	0.200	0.3	0.100	0.07
1/8 (0.125)	1	2027	30	80	45	95	130	0.200	0.200	0.3	0.100	0.06
3/16 (0.1875)	1	2027	30	80	45	80	129	0.200	0.200	0.3	0.100	0.06
1/4 (0.25)	2	2027	30	80	45	65	132	0.200	0.200	0.3	0.100	0.06

Aluminum – 60 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420297	420323	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	48 / 102
Pierce flow	63 / 134
Cut flow	72 / 154

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	1	2026	30	82	65	2776	129	5.00	5.00	0.3	3.20	1.6
4	1	2026	30	82	65	2245	130	5.00	5.00	0.3	2.50	1.5
5	1	2025	30	82	55	1886	131	5.00	5.00	0.3	2.50	1.5
6	2	2024	30	82	45	1697	132	5.00	5.00	0.6	2.50	1.4

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.102)	3	2026	30	82	65	120	131	0.200	0.200	0.3	0.120	0.06
1/8 (0.125)	1	2026	30	82	65	100	128	0.200	0.200	0.3	0.120	0.06
3/16 (0.1875)	1	2025	30	82	55	80	131	0.200	0.200	0.3	0.100	0.06
1/4 (0.25)	2	2024	30	82	45	60	132	0.200	0.200	0.6	0.100	0.05

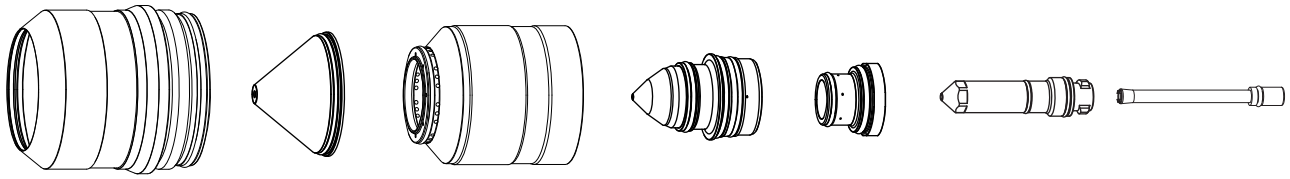
Aluminum – 60 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	1.8 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9012	14	90	20	2.50 mm	2540 mm/min	77 V	1.3 mm
English	Ar	N_2	9012	14	90	20	0.100 in.	100 in./min	77 V	0.05 in.

Aluminum – 60 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420300	420365	420296	420323	420303	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	27 / 57	0.2 / 3*
Pierce flow	34 / 72	0.2 / 3*
Cut flow	20 / 42	0.4 / 7*

*Gallons per hour (gph)

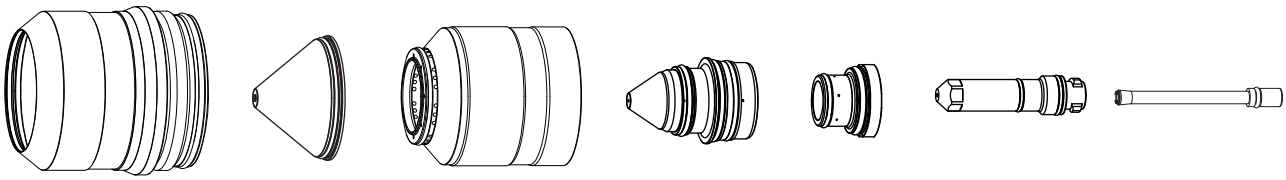
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutlow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	1	2028	10	80	30	2754	122	5.00	5.00	0.3	2.50	1.4
4	1	2028	10	80	30	2402	124	5.00	5.00	0.3	2.00	1.4
5	1	2028	10	80	30	2050	126	5.00	5.00	0.3	2.00	1.4
6	2	2028	10	80	30	1698	128	5.00	5.00	0.6	2.50	1.5

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutlow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.102)	3	2028	10	80	30	120	126	0.200	0.200	0.3	0.120	0.05
1/8 (0.125)	1	2028	10	80	30	100	122	0.200	0.200	0.3	0.100	0.06
3/16 (0.1875)	1	2028	10	80	30	80	122	0.200	0.200	0.3	0.100	0.06
1/4 (0.25)	2	2028	10	80	30	65	124	0.200	0.200	0.6	0.100	0.05
3/8 (0.375)	2	2028	10	80	30	18	138	0.200	0.200	0.8	0.120	0.06

Aluminum – 80 A – Air Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420306	420323	420294	420368

Flow rate (lpm/scfh)		
	N_2	Air
Pre flow	51 / 107	–
Pierce flow	23 / 48	43 / 91
Cut flow	–	69 / 147

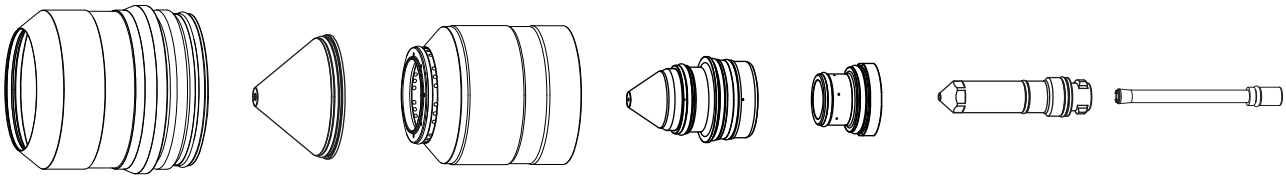
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2008	30	80	55	3874	128	5.00	5.00	0.3	2.00	1.7
4	3	2008	30	80	55	3143	129	5.00	5.00	0.3	2.00	1.6
5	3	2009	30	80	40	2520	129	5.00	5.00	0.3	2.00	1.5
6	1	2009	30	80	40	2005	127	5.00	5.00	0.5	2.00	1.5
8	1	2009	30	80	40	1297	128	5.00	5.00	0.6	2.00	1.6
10	1	2009	30	80	40	1019	131	5.00	5.00	0.6	2.00	1.7

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/16 (0.1875)	3	2008	30	80	55	100	130	0.200	0.200	0.3	0.080	0.06
1/4 (0.25)	1	2009	30	80	40	70	126	0.200	0.200	0.5	0.080	0.06
5/16 (0.313)	1	2009	30	80	40	55	128	0.200	0.200	0.6	0.080	0.06
3/8 (0.375)	1	2009	30	80	40	40	130	0.200	0.200	0.6	0.080	0.07

Aluminum – 80 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420306	420323	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	51 / 108
Pierce flow	67 / 143
Cut flow	68 / 144

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2006	30	80	45	3820	120	5.00	5.00	0.3	2.50	1.7
4	3	2006	30	80	45	3220	119	5.00	5.00	0.3	2.50	1.6
5	3	2007	30	80	40	2692	118	5.00	5.00	0.3	2.00	1.5
6	1	2007	30	80	40	2237	120	5.00	5.00	0.5	2.00	1.6
8	1	2007	30	80	40	1543	122	5.00	5.00	0.6	2.00	1.7
10	1	2007	30	80	40	1138	125	5.00	5.00	0.6	2.00	1.7

Aluminum – 80 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

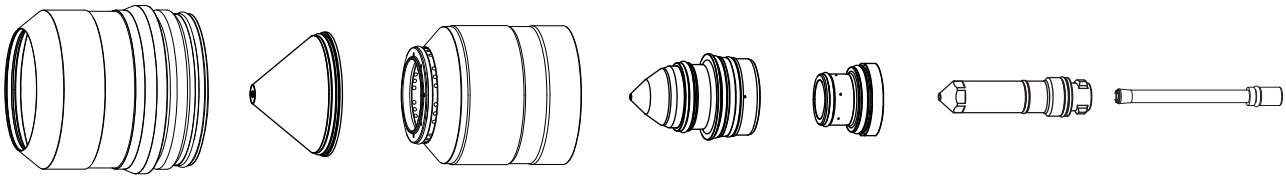
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/8 (0.125)	3	2006	30	80	45	140	120	0.200	0.200	0.3	0.100	0.07
3/16 (0.1875)	3	2006	30	80	45	110	118	0.200	0.200	0.3	0.080	0.06
1/4 (0.25)	1	2007	30	80	40	84	120	0.200	0.200	0.5	0.080	0.06
5/16 (0.313)	1	2007	30	80	40	64	122	0.200	0.200	0.6	0.080	0.07
3/8 (0.375)	1	2007	30	80	40	48	124	0.200	0.200	0.6	0.080	0.07

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.50 mm	6350 mm/min	120 V	1.6 mm
English	N_2	N_2	8002	15	25	5	0.100 in.	250 in./min	120 V	0.06 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9013	16	90	20	2.50 mm	2540 mm/min	78 V	1.5 mm
English	Ar	N_2	9013	16	90	20	0.100 in.	100 in./min	78 V	0.06 in.

Aluminum – 80 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420300	420365	420290	420323	420303	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	30 / 64	0.2 / 3*
Pierce flow	37 / 79	0.2 / 3*
Cut flow	24 / 51	0.4 / 6*

*Gallons per hour (gph)

Metric

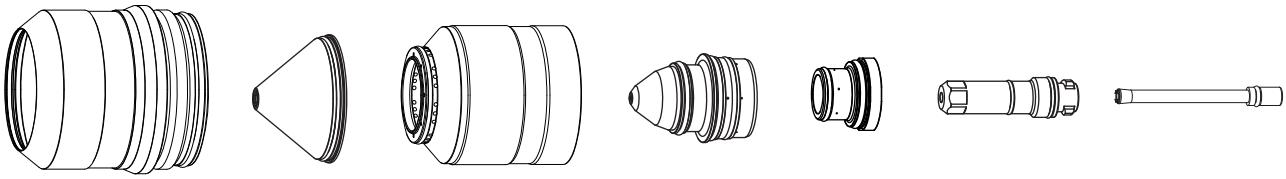
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2010	10	80	30	3820	121	5.00	5.00	0.3	2.00	1.7
4	3	2010	10	80	30	3216	122	5.00	5.00	0.3	2.00	1.6
5	3	2010	10	80	30	2677	124	5.00	5.00	0.3	2.00	1.6
6	1	2010	10	80	30	2203	126	5.00	5.00	0.5	2.00	1.6
7	1	2010	10	80	30	1794	128	5.00	5.00	0.5	2.00	1.6
8	1	2010	10	80	30	1450	129	5.00	5.00	0.6	2.00	1.7
10	1	2010	10	80	30	956	133	5.00	5.00	0.6	2.00	1.8

Aluminum – 80 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/8 (0.125)	3	2010	10	80	30	140	120	0.200	0.200	0.3	0.080	0.07
3/16 (0.1875)	3	2010	10	80	30	110	122	0.200	0.200	0.3	0.080	0.06
1/4 (0.25)	1	2010	10	80	30	80	126	0.200	0.200	0.5	0.080	0.06
5/16 (0.313)	1	2010	10	80	30	60	129	0.200	0.200	0.6	0.080	0.07
3/8 (0.375)	1	2010	10	80	30	40	132	0.200	0.200	0.6	0.080	0.07
7/16 (0.438)	2	2010	10	80	30	31	134	0.200	0.200	0.8	0.080	0.07
1/2 (0.5)	2	2011	10	86	30	28	135	0.200	0.200	0.8	0.080	0.06

Aluminum – 130 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420318	420365	420315	420314	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	92 / 195
Pierce flow	150 / 320
Cut flow	135 / 287

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2051	52	90	52	2413	171	6.10	6.10	0.4	2.54	2.5
7	3	2051	52	90	52	2358	172	6.10	6.10	0.4	2.54	2.5
8	3	2051	52	90	52	2078	173	6.10	6.10	0.5	2.54	2.5
10	1	2051	52	90	52	1594	175	6.10	6.10	0.5	2.54	2.5
12	1	2051	52	90	52	1354	176	6.10	6.10	0.6	2.54	2.5
15	2	2051	52	90	52	1178	178	6.10	6.10	0.7	3.05	2.4
20	2	2051	52	90	52	635	181	6.10	6.10	1.3	3.05	2.7

Aluminum – 130 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

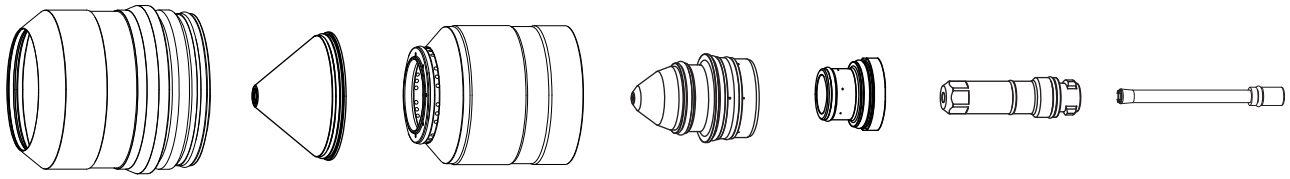
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2051	52	90	52	100	172	0.240	0.240	0.4	0.100	0.10
5/16 (0.313)	3	2051	52	90	52	82	173	0.240	0.240	0.4	0.100	0.10
3/8 (0.375)	1	2051	52	90	52	65	174	0.240	0.240	0.5	0.100	0.10
1/2 (0.5)	1	2051	52	90	52	50	177	0.240	0.240	0.6	0.100	0.10
5/8 (0.625)	2	2051	52	90	52	45	178	0.240	0.240	0.7	0.120	0.09
3/4 (0.75)	2	2051	52	90	52	30	180	0.240	0.240	1.2	0.120	0.10

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8004	18	20	15	2.50 mm	6350 mm/min	145 V	1.3 mm
English	N_2	N_2	8004	18	20	15	0.100 in.	250 in./min	145 V	0.05 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9014	24	65	15	2.50 mm	2540 mm/min	88 V	2.0 mm
English	Ar	N_2	9014	24	65	15	0.100 in.	100 in./min	88 V	0.08 in.

Aluminum – 130 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420469	420365	420315	420314	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	38	0.42 / 6.5*
Pierce flow	97	0.5 / 8*
Cut flow	34 / 73	0.5 / 8*

* Gallons per hour (gph)

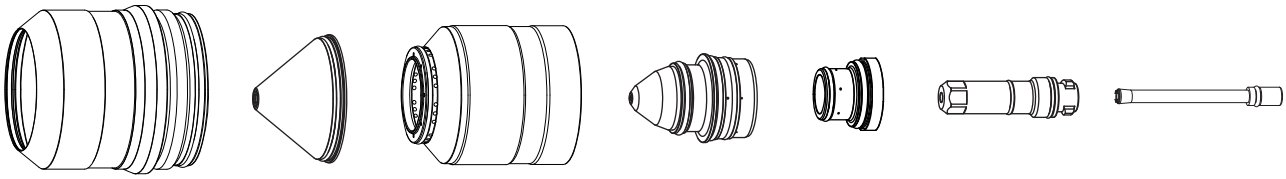
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2052	25	90	25	2413	171	6.10	6.10	0.4	2.54	2.5
8	3	2052	25	90	25	2083	173	6.10	6.10	0.5	2.54	2.5
10	1	2052	25	90	25	1702	175	6.10	6.10	0.6	2.54	2.5
12	1	2052	25	90	25	1382	178	6.10	6.10	0.8	2.54	2.5
15	2	2052	25	90	25	1178	181	6.10	6.10	0.9	3.05	2.8
20	2	2052	25	90	25	762	185	6.10	6.10	1.3	3.05	3.2

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2052	25	90	25	95	172	0.240	0.240	0.4	0.100	0.10
5/16 (0.313)	3	2052	25	90	25	82	173	0.240	0.240	0.5	0.100	0.10
3/8 (0.375)	1	2052	25	90	25	70	175	0.240	0.240	0.6	0.100	0.10
1/2 (0.5)	1	2052	25	90	25	50	179	0.240	0.240	0.8	0.100	0.10
5/8 (0.625)	2	2052	25	90	25	45	181	0.240	0.240	1.0	0.120	0.11
3/4 (0.75)	2	2052	25	90	25	35	184	0.240	0.240	1.2	0.120	0.12

Aluminum – 130 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420318	420365	420315	420323	420356	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	103 / 220
Pierce flow	8 / 17	12 / 25	150 / 320
Cut flow	8 / 17	12 / 25	139 / 299

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
6	3	2060	52	4	12	24	52	2413	174	5.08	5.08	0.3	2.54	2.4
7	3	2060	52	4	12	24	52	2205	177	52	5.08	0.3	2.54	2.4
8	3	2060	52	4	12	24	52	1885	180	52	5.08	0.4	2.54	2.5
10	1	2053	53	6	10	24	53	1340	186	52	5.08	0.5	2.54	2.6
12	1	2053	53	6	10	24	53	1100	188	52	5.08	0.6	2.54	2.5
15	2	2061	50	8	12	20	52	1016	190	6.10	6.10	0.7	3.05	2.6
20	2	2061	50	8	12	20	52	813	194	6.10	6.10	1.5	3.05	2.9

Aluminum – 130 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

English

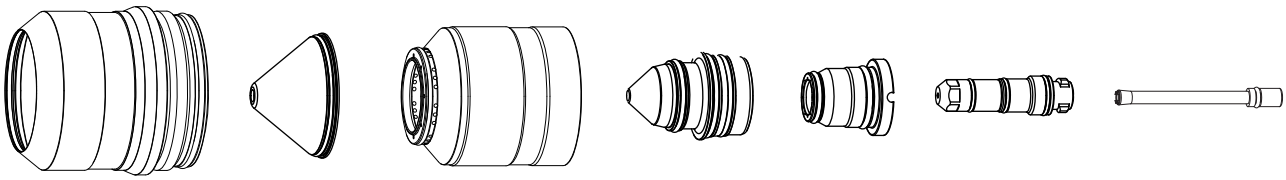
Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2060	52	4	12	24	52	95	175	0.200	0.200	0.3	0.100	0.09
5/16 (0.313)	3	2060	52	4	12	24	52	75	180	0.200	0.200	0.4	0.100	0.10
3/8 (0.375)	1	2053	53	6	10	24	53	55	185	0.200	0.200	0.5	0.100	0.10
1/2 (0.5)	1	2053	53	6	10	24	53	40	189	0.200	0.200	0.6	0.100	0.10
5/8 (0.625)	2	2061	50	8	12	20	52	40	190	0.240	0.240	0.8	0.120	0.10
3/4 (0.75)	2	2061	50	8	12	20	52	35	193	0.240	0.240	1.5	0.120	0.11

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8004	18	20	15	2.50 mm	6350 mm/min	145 V	1.3 mm
English	N_2	N_2	8004	18	20	15	0.100 in.	250 in./min	145 V	0.05 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9014	24	65	15	2.50 mm	2540 mm/min	88 V	2.0 mm
English	Ar	N_2	9014	24	65	15	0.100 in.	100 in./min	88 V	0.08 in.

Aluminum – 170 A – Air Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420513	420365	420524	420260	420258	420368

Flow rate (lpm/scfh)		
	N_2	Air
Pre flow	25 / 52	78 / 166
Pierce flow	–	99 / 210
Cut flow	–	99 / 210

Metric

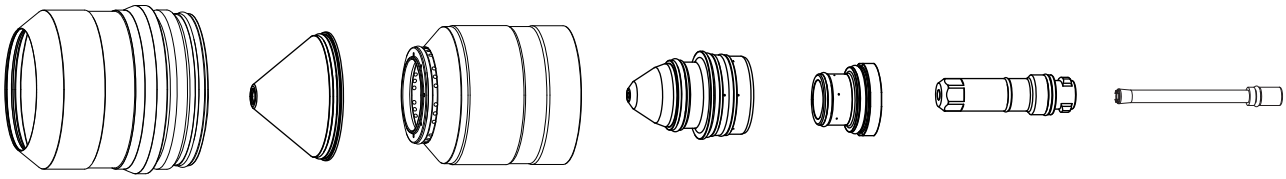
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2101	40	78	77	4826	136	5.59	5.59	0.3	2.79	2.9
7	3	2101	40	78	77	4566	136	5.59	5.59	0.3	2.79	2.9
8	3	2101	40	78	77	4166	136	5.59	5.59	0.4	2.79	2.9
10	3	2101	40	78	77	3385	136	5.59	5.59	0.4	2.79	2.7
12	1	2101	40	78	77	2665	138	5.59	5.59	0.6	2.79	2.7
15	1	2101	40	78	77	1769	145	7.62	7.62	0.7	3.81	2.5
20	2	2101	40	78	77	1086	151	7.62	7.62	1.0	3.81	2.9
25	2	2101	40	78	77	786	155	7.62	7.62	1.2	3.81	3.0
30	4	2101	40	78	77	486	162	Edge start	Edge start	0.3	4.57	3.1
32	4	2101	40	78	77	376	165	Edge start	Edge start	0.3	4.57	3.1
38	4	2101	40	78	77	256	172	Edge start	Edge start	0.3	4.57	3.4

Aluminum – 170 A – Air Plasma / Air Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2101	40	78	77	190	136	0.220	0.220	0.3	0.110	0.12
5/16 (0.313)	3	2101	40	78	77	165	136	0.220	0.220	0.4	0.110	0.11
3/8 (0.375)	3	2101	40	78	77	140	136	0.220	0.220	0.4	0.110	0.11
1/2 (0.5)	1	2101	40	78	77	95	139	0.220	0.220	0.6	0.110	0.10
5/8 (0.625)	1	2101	40	78	77	60	147	0.300	0.300	0.8	0.150	0.10
3/4 (0.75)	2	2101	40	78	77	45	150	0.300	0.300	1.0	0.150	0.11
1 (1)	2	2101	40	78	77	30	155	0.300	0.300	1.2	0.150	0.12
1-1/4 (1.25)	4	2101	40	78	77	15	165	Edge start	Edge start	0.3	0.180	0.12
1-1/2 (1.5)	4	2101	40	78	77	10	172	Edge start	Edge start	0.3	0.180	0.13

Aluminum – 170 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420327	420365	420324	420314	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	99 / 210
Pierce flow	168 / 355
Cut flow	151 / 322

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2057	54	90	54	5969	154	6.10	6.10	0.3	2.54	2.4
7	3	2057	54	90	54	5735	156	6.10	6.10	0.3	2.54	2.4
8	1	2057	54	90	54	5375	157	6.10	6.10	0.4	2.54	2.3
10	1	2057	54	90	54	4560	159	6.10	6.10	0.4	2.54	2.2
15	2	2057	54	90	54	2220	166	6.10	6.10	0.9	3.00	2.3
20	2	2057	54	90	54	1156	178	6.10	6.10	1.6	3.81	2.6
25	4	2057	54	90	54	556	187	Edge start	Edge start	0.5	3.81	2.8

Aluminum – 170 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

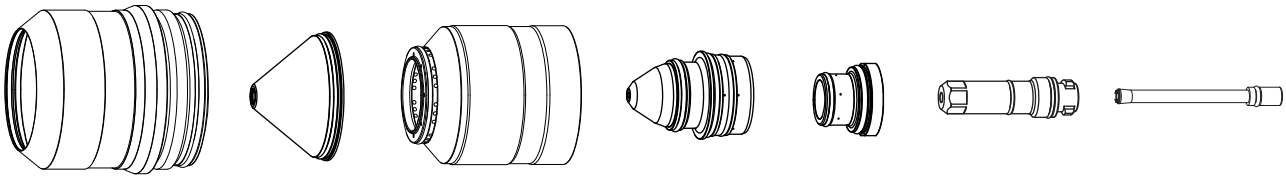
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2057	54	90	54	235	154	0.240	0.240	0.3	0.100	0.09
3/8 (0.375)	3	2057	54	90	54	190	158	0.240	0.240	0.4	0.100	0.09
1/2 (0.5)	1	2057	54	90	54	120	163	0.240	0.240	0.7	0.100	0.09
5/8 (0.625)	1	2057	54	90	54	75	167	0.240	0.240	1.0	0.120	0.09
3/4 (0.75)	2	2057	54	90	54	50	176	0.240	0.240	1.5	0.150	0.10
1 (1)	2	2057	54	90	54	20	188	0.240	0.240	2.0	0.150	0.11

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.50 mm	6350 mm/min	121 V	1.8 mm
English	N_2	N_2	8005	18	20	15	0.100 in.	250 in./min	121 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9015	24	55	15	2.50 mm	3810 mm/min	97 V	1.7 mm
English	Ar	N_2	9015	24	55	15	0.100 in.	150 in./min	97 V	0.07 in.

Aluminum – 170 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420472	420365	420324	420314	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	19 / 40	0.4 / 6*
Pierce flow	47 / 100	0.5 / 8*
Cut flow	33 / 71	0.4 / 7*

* Gallons per hour (gph)

Metric

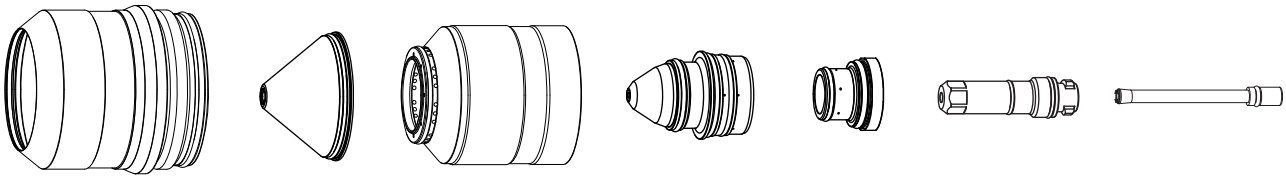
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2058	30	90	30	1994	168	7.62	7.62	0.4	2.54	2.7
12	1	2058	30	90	30	1834	170	7.62	7.62	0.6	2.54	2.8
15	1	2058	30	90	30	1502	174	7.62	7.62	0.9	2.54	2.8
20	2	2058	30	90	30	978	180	7.62	7.62	2.3	2.54	3.0
25	2	2058	30	90	30	778	185	7.62	7.62	4.0	2.54	3.3
30	4	2058	30	90	30	642	189	Edge start	Edge start	0.3	2.54	3.4
32	4	2058	30	90	30	590	190	Edge start	Edge start	0.4	2.54	3.4
38	5	2058	30	90	30	434	195	Edge start	Edge start	0.5	2.54	3.6

Aluminum – 170 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	2058	30	90	30	80	168	0.300	0.300	0.4	0.100	0.11
1/2 (0.5)	1	2058	30	90	30	70	171	0.300	0.300	0.6	0.100	0.11
5/8 (0.625)	1	2058	30	90	30	55	175	0.300	0.300	1.0	0.100	0.11
3/4 (0.75)	2	2058	30	90	30	40	179	0.300	0.300	2.0	0.100	0.12
1 (1)	2	2058	30	90	30	30	185	0.300	0.300	4.0	0.100	0.13
1-1/4 (1.25)	4	2058	30	90	30	23	190	Edge start	Edge start	0.3	0.100	0.14
1-1/2 (1.5)	5	2058	30	90	30	17	195	Edge start	Edge start	0.5	0.100	0.14

Aluminum – 170 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420327	420365	420324	420323	420356	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	101 / 215
Pierce flow	8 / 17	12 / 25	162 / 345
Cut flow	8 / 17	12 / 25	160 / 340

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
10	3	2059	54	6	8	26	54	3334	172	5.08	5.08	0.4	2.54	2.5
12	1	2059	54	6	8	26	54	2934	179	5.08	5.08	0.6	2.54	2.5
15	1	2059	54	6	8	26	54	2150	179	5.08	5.08	0.7	2.54	2.5
20	2	2062	54	6	10	24	54	1213	192	7.62	7.62	1.1	2.54	2.9
25	2	2063	54	8	6	26	54	913	196	7.62	15.24	1.9	3.05	3.2
30	2	2064	54	8	12	20	54	650	198	Edge start	Edge start	0.5	4.57	3.2
32	2	2064	54	8	12	20	54	552	199	Edge start	Edge start	0.5	4.57	3.3
38	4	2064	54	8	12	20	54	384	202	Edge start	Edge start	0.5	4.57	3.3

Aluminum – 170 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

English

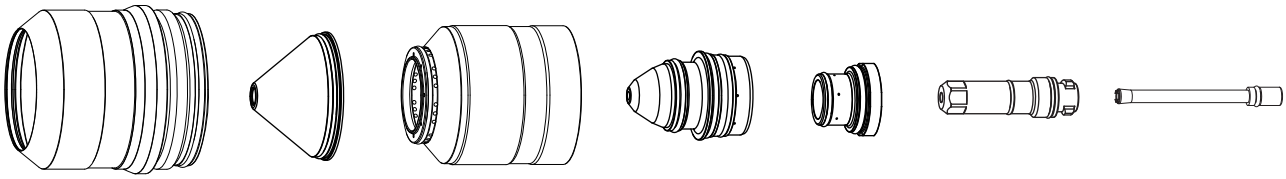
Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce pressure	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	2059	54	6	8	26	54	135	171	0.200	0.200	0.4	0.100	0.10
1/2 (0.5)	1	2059	54	6	8	26	54	110	181	0.200	0.200	0.6	0.100	0.10
5/8 (0.625)	1	2059	54	6	8	26	54	75	178	0.200	0.200	0.8	0.100	0.10
3/4 (0.75)	2	2062	54	6	10	24	54	50	191	0.300	0.300	1.0	0.100	0.11
1 (1)	2	2063	54	8	6	26	54	35	196	0.300	0.600	2.0	0.120	0.13
1-1/4 (1.25)	4	2064	54	8	12	20	54	22	199	Edge start	Edge start	0.5	0.180	0.13
1-1/2 (1.5)	4	2064	54	8	12	20	54	15	202	Edge start	Edge start	0.5	0.180	0.13

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.50 mm	6350 mm/min	121 V	1.8 mm
English	N_2	N_2	8005	18	20	15	0.100 in.	250 in./min	121 V	0.07 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9015	24	55	15	2.50 mm	3810 mm/min	97 V	1.7 mm
English	Ar	N_2	9015	24	55	15	0.100 in.	150 in./min	97 V	0.07 in.

Aluminum – 300 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420362	420365	420359	420323	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	106 / 225
Pierce flow	181 / 385
Cut flow	178 / 370

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2054	54	90	54	5182	168	7.62	7.62	0.4	3.81	3.4
12	3	2054	54	90	54	4542	170	7.62	7.62	0.4	3.81	3.4
15	3	2054	54	90	54	3582	172	7.62	7.62	0.5	3.81	3.4
20	1	2054	54	90	54	2064	181	7.62	7.62	0.9	5.08	3.7
25	1	2054	54	90	54	1564	185	7.62	12.70	1.5	5.08	3.8
30	4	2054	54	90	54	1248	191	Edge start	Edge start	0.5	6.35	4.2
38	4	2100	54	90	58	643	201	Edge start	Edge start	0.6	6.35	4.8
40	4	2100	54	90	58	559	205	Edge start	Edge start	0.6	6.35	4.8
44	4	2100	54	90	58	399	212	Edge start	Edge start	0.8	6.35	4.8
50	5	2100	54	90	58	270	218	Edge start	Edge start	1.0	6.35	4.9

Aluminum – 300 A – N_2 Plasma / N_2 Shield – above water (Core, CorePlus, VWI, OptiMix) (continued)

English

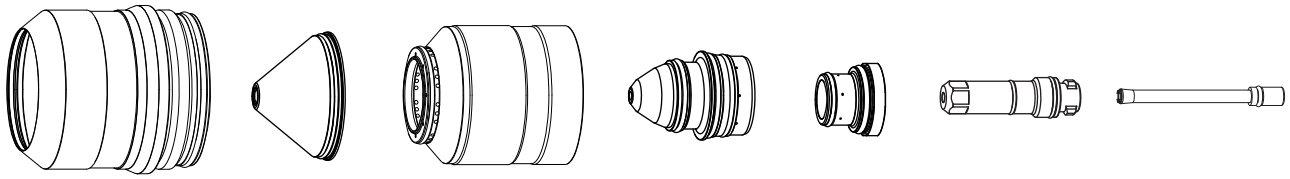
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	2054	54	90	54	210	168	0.300	0.300	0.4	0.150	0.13
1/2 (0.5)	3	2054	54	90	54	170	171	0.300	0.300	0.4	0.150	0.13
5/8 (0.625)	3	2054	54	90	54	130	172	0.300	0.300	0.5	0.150	0.13
3/4 (0.75)	1	2054	54	90	54	85	180	0.300	0.300	0.8	0.200	0.14
1 (1)	1	2054	54	90	54	60	185	0.300	0.500	1.5	0.200	0.15
1-1/4 (1.25)	4	2054	54	90	54	45	193	Edge start	Edge start	0.5	0.250	0.17
1-1/2 (1.5)	4	2100	54	90	58	25	201	Edge start	Edge start	0.5	0.250	0.19
1-3/4 (1.75)	4	2100	54	90	58	15	213	Edge start	Edge start	0.8	0.250	0.19
2 (2)	5	2100	54	90	58	10	219	Edge start	Edge start	1.0	0.250	0.19

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8006	18	25	15	2.50 mm	2540 mm/min	135 V	0.7 mm
English	N_2	N_2	8006	18	25	15	0.100 in.	100 in./min	135 V	0.03 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9016	28	45	15	2.50 mm	2540 mm/min	70 V	1.4 mm
English	Ar	N_2	9016	28	45	15	0.100 in.	100 in./min	70 V	0.06 in.

Aluminum – 300 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420475	420365	420359	420323	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	31 / 65	0.42 / 6.5*
Pierce flow	75 / 160	0.5 / 8*
Cut flow	59 / 126	0.5 / 8*

* Gallons per hour (gph)

Metric

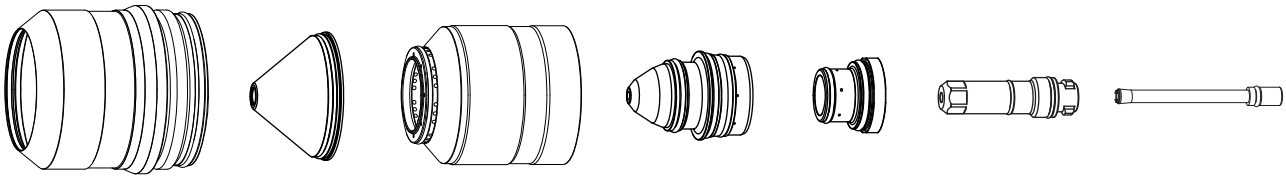
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2055	22	90	22	2286	179	7.62	7.62	0.5	3.81	3.8
15	3	2055	22	90	22	2010	180	7.62	7.62	0.7	3.81	3.7
20	1	2055	22	90	22	1702	184	7.62	8.89	1.1	5.08	4.0
25	1	2055	22	90	22	1302	188	7.62	15.24	1.9	5.08	4.2
30	2	2055	22	90	22	1086	192	7.62	17.78	3.1	5.08	4.4
32	2	2055	22	90	22	1006	194	7.62	17.78	3.6	5.08	4.5
38	4	2055	22	90	22	766	200	Edge start	Edge start	0.4	6.35	4.7
40	4	2055	22	90	22	724	200	Edge start	Edge start	0.4	6.35	4.8
44	4	2055	22	90	22	644	200	Edge start	Edge start	0.4	6.35	5.0
50	4	2055	22	90	22	524	200	Edge start	Edge start	1.0	6.35	5.3

Aluminum – 300 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	2055	22	90	22	90	179	0.300	0.300	0.5	0.150	0.15
5/8 (0.625)	3	2055	22	90	22	75	180	0.300	0.300	0.8	0.150	0.15
3/4 (0.75)	1	2055	22	90	22	70	183	0.300	0.300	1.0	0.200	0.16
1 (1)	1	2055	22	90	22	50	188	0.300	0.600	2.0	0.200	0.16
1-1/2 (1.5)	4	2055	22	90	22	30	200	Edge start	Edge start	0.4	0.250	0.19
2 (2)	4	2055	22	90	22	20	200	Edge start	Edge start	1.0	0.250	0.21

Aluminum – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420362	420365	420359	420358	420356	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	118 / 250
Pierce flow	24 / 51	48 / 102	150 / 320
Cut flow	23 / 50	47 / 101	152 / 326

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
12	3	2065	54	18	24	18	54	3810	171	8.89	8.89	0.4	5.08	4.0
15	3	2065	54	18	24	18	54	3442	175	8.89	8.89	0.5	5.08	4.1
20	1	2056	54	24	21	15	54	2356	182	8.89	8.89	0.9	5.08	4.2
25	1	2056	54	24	21	15	54	2056	188	8.89	8.89	1.2	5.08	4.2
30	2	2056	54	24	21	15	54	1480	192	8.89	12.70	1.9	5.08	4.6
32	2	2056	54	24	21	15	54	1245	194	8.89	12.70	2.3	5.08	4.7
38	2	2065	54	18	24	18	54	645	202	8.89	15.24	4.0	6.35	5.4
40	4	2065	54	18	24	18	54	582	197	Edge start	Edge start	0.5	6.35	5.5
44	4	2066	54	12	48	0	54	470	185	Edge start	Edge start	0.5	6.35	5.8
50	4	2066	54	12	48	0	54	391	187	Edge start	Edge start	0.5	6.35	6.0

Aluminum – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

English

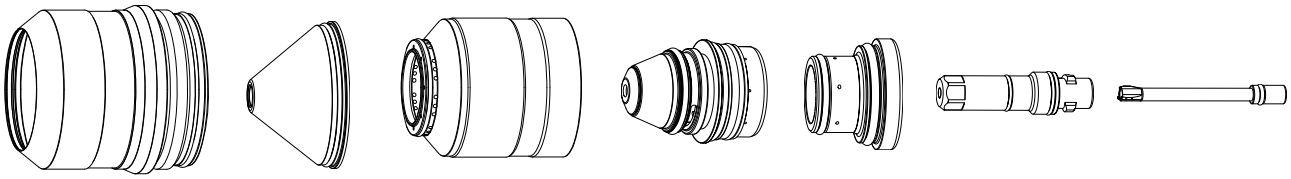
Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	2065	54	18	24	18	54	150	171	0.350	0.350	0.4	0.200	0.16
5/8 (0.625)	3	2065	54	18	24	18	54	130	176	0.350	0.350	0.6	0.200	0.16
3/4 (0.75)	1	2056	54	24	21	15	54	95	181	0.350	0.350	0.8	0.200	0.17
1 (1)	1	2056	54	24	21	15	54	80	188	0.350	0.350	1.2	0.200	0.17
1-1/4 (1.25)	2	2056	54	24	21	15	54	50	194	0.350	0.500	2.2	0.200	0.18
1-1/2 (1.5)	2	2065	54	18	24	18	54	25	202	0.350	0.600	4.0	0.250	0.21
1-3/4 (1.75)	4	2066	54	12	48	0	54	18	184	Edge start	Edge start	0.5	0.250	0.23
2 (2)	4	2066	54	12	48	0	54	15	187	Edge start	Edge start	0.5	0.250	0.24

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8006	18	25	15	2.50 mm	2540 mm/min	135 V	0.7 mm
English	N_2	N_2	8006	18	25	15	0.100 in.	100 in./min	135 V	0.03 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9017	28	35	15	2.50 mm	2540 mm/min	77 V	1.4 mm
English	Ar	N_2	9017	28	35	15	0.100 in.	100 in./min	77 V	0.06 in.

Aluminum – 460 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420998	420365	420996	420358	420997	420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	151 / 320
Pierce flow	31 / 66	179 / 380	160 / 339
Cut flow	31 / 66	162 / 343	160 / 339

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
mm				H_2	Ar	N_2		mm/min	volts	mm	mm	seconds	mm	mm
16	3	2073	54	27	26	22	55	5046	178	14.2	17.8	0.3	5.1	5.1
20	3	2073	54	27	26	22	55	3958	183	14.2	17.8	0.6	5.1	5.1
25	3	2071	54	28	28	19	55	2909	197	14.2	17.8	1.0	8.9	6.0
30	1	2071	54	28	28	19	55	2642	199	14.2	17.8	1.1	8.9	6.0
35	1	2071	54	28	28	19	55	2422	200	14.2	17.8	1.3	8.9	6.0
38	1	2071	54	28	28	19	55	2290	201	14.2	17.8	1.3	8.9	6.0
40†	2	2072	54	31	31	13	55	2210	199	14.2	21.6	1.4	10.2	6.0
50†	2	2072	54	31	31	13	55	1810	211	14.2	21.6	1.7	11.4	6.4
55†	4	2074	60	26	49	0	55	1610	204	Edge start	Edge start	1.0	12.7	6.9
60†	4	2074	60	26	49	0	55	1410	206	Edge start	Edge start	1.0	12.7	6.9
70†	4	2074	60	26	49	0	55	1010	202	Edge start	Edge start	1.0	10.2	5.8
75	5	2075	55	25	45	0	55	810	209	Edge start	Edge start	1.0	10.2	7.7
80	5	2075	55	25	45	0	55	625	213	Edge start	Edge start	1.1	7.6	4.6
90	5	2075	55	25	45	0	55	300	221	Edge start	Edge start	2.7	7.6	4.9

† Argon-assisted piercing or edge start.

Aluminum – 460 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in.				H_2	Ar	N_2		in./min	volts	in.	in.	seconds	in.	in.
5/8 (0.625)	3	2073	54	27	26	22	55	200	178	0.560	0.700	0.3	0.200	0.202
3/4 (0.75)	3	2073	54	27	26	22	55	166	182	0.560	0.700	0.5	0.200	0.202
7/8 (0.875)	3	2073	54	27	26	22	55	132	186	0.560	0.700	0.7	0.200	0.202
1 (1)	3	2071	54	28	28	19	55	112	197	0.560	0.700	1.0	0.350	0.234
1-1/4 (1.25)	1	2071	54	28	28	19	55	101	199	0.560	0.700	1.1	0.350	0.238
1-1/2 (1.5)	1	2071	54	28	28	19	55	90	201	0.560	0.700	1.3	0.350	0.236
1-3/4 (1.75)†	2	2072	54	31	31	13	55	80	203	0.560	0.850	1.6	0.400	0.237
2 (2)†	2	2072	54	31	31	13	55	70	212	0.560	0.850	1.7	0.450	0.253
2-1/4 (2.25)†	4	2074	60	26	49	0	55	60	205	Edge start	Edge start	1.0	0.500	0.27
2-1/2 (2.5)†	4	2074	60	26	49	0	55	50	208	Edge start	Edge start	1.0	0.500	0.275
2-3/4 (2.75)†	4	2074	60	26	49	0	55	40	202	Edge start	Edge start	1.0	0.400	0.230
3 (3)	5	2075	55	25	45	0	55	30	210	Edge start	Edge start	1.0	0.400	0.303
3-1/4 (3.25)	5	2075	55	25	45	0	55	21	215	Edge start	Edge start	1.5	0.300	0.180
3-1/2 (3.5)	5	2075	55	25	45	0	55	12	221	Edge start	Edge start	2.5	0.300	0.190

† Argon-assisted piercing or edge start.

Aluminum – 460 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix) (continued)

Marking

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8011	25	25	40	2.54 mm	2540 mm/min	94 V	0.86 mm
English	N_2	N_2	8011	25	25	40	0.1 in.	100 in./min	94 V	0.034 in.

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9021	42	35	25	2.54 mm	2540 mm/min	57 V	1.36 mm
English	Ar	N_2	9021	42	35	25	0.1 in.	100 in./min	57 V	0.054 in.

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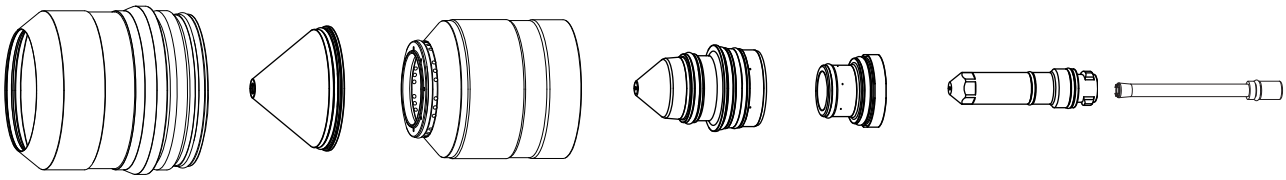
Cut charts for ferrous (mild steel) processes – underwater

Mild steel – 80 A – O_2 Plasma / Air Shield (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420246	420365	420243	420242	420240	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	38/80	–	49/105
Pierce flow	–	38/80	49/105
Cut flow	–	24 / 52	46/98

Metric

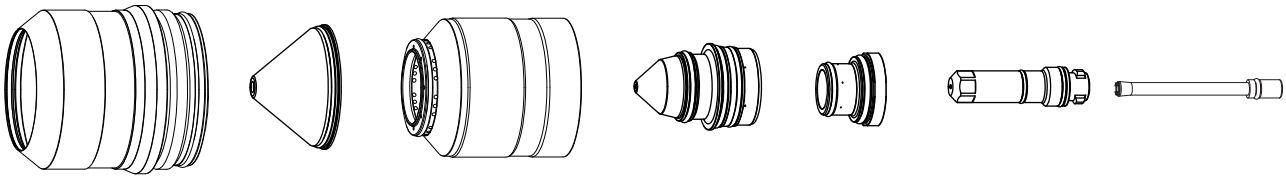
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm							volts	mm	mm	seconds	mm	mm
3	3	1001	18	82	72	5023	118	4.06	4.06	0.2	2.03	1.8
4	3	1002	18	82	68	3878	118	4.06	4.06	0.2	2.03	1.8
5	3	1002	18	82	68	3367	120	4.06	4.06	0.2	2.03	1.8
6	1	1003	18	82	56	2529	124	4.06	4.06	0.3	2.03	1.9
7	1	1003	18	82	56	2121	123	4.06	4.06	0.3	2.03	2.0
8	1	1004	18	82	52	1939	121	4.06	4.06	0.4	2.03	2.0
9	1	1004	18	82	52	1667	122	4.06	4.06	0.5	2.03	2.0
10	1	1005	18	82	46	1494	123	4.37	4.37	0.5	2.03	2.1
12	2	1005	18	82	46	1338	125	5.08	5.08	0.7	2.03	2.2

Mild steel – 80 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
12 GA (0.105)	3	1001	18	82	72	203	118	0.160	0.160	0.1	0.080	0.07
10 GA (0.135)	3	1001	18	82	72	162	118	0.160	0.160	0.2	0.080	0.07
3/16 (0.188)	3	1002	18	82	68	140	119	0.160	0.160	0.2	0.080	0.07
1/4 (0.25)	1	1003	18	82	56	88	125	0.160	0.160	0.3	0.080	0.08
5/16 (0.313)	1	1004	18	82	52	77	121	0.160	0.160	0.4	0.080	0.08
3/8 (0.375)	1	1005	18	82	46	60	123	0.160	0.160	0.5	0.080	0.08
1/2 (0.5)	2	1005	18	82	46	50	126	0.200	0.200	0.7	0.080	0.09

Mild steel – 130 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420255	420365	420252	420242	420249	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	33 / 69	–	85 / 180
Pierce flow	–	31 / 65	82 / 173
Cut flow	–	31 / 65	92 / 195

Metric

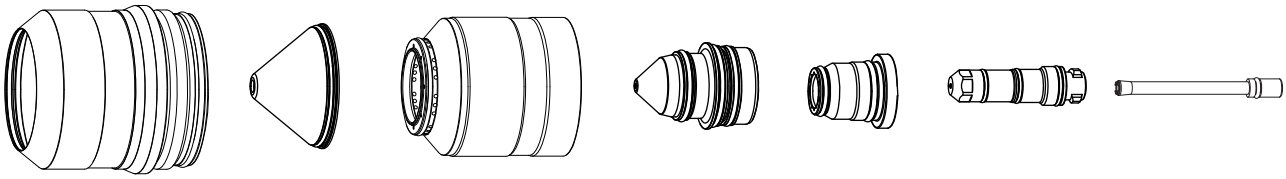
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	1101	37	92	45	5842	132	5.08	5.08	0.1	2.54	2.2
4	3	1101	37	92	45	5002	133	5.30	5.30	0.1	2.65	2.3
5	3	1101	37	92	45	4158	134	5.59	5.59	0.2	2.79	2.3
6	1	1102	37	92	27	3336	137	5.59	5.59	0.3	2.79	2.4
7	1	1103	37	92	82	3017	136	5.80	5.80	0.3	2.79	2.4
8	1	1103	37	92	82	2943	134	6.10	6.10	0.3	2.79	2.4
10	1	1104	37	92	77	2144	138	6.25	6.25	0.4	2.79	2.6
12	1	1105	37	92	72	1760	141	6.60	6.60	0.5	2.79	2.6
15	2	1105	37	92	72	1499	145	7.62	7.62	0.7	3.81	2.8
20	2	1105	37	92	72	973	152	7.62	7.62	1.1	3.81	3.1
25	2	1105	37	92	72	502	158	7.62	7.62	1.7	4.03	3.7

Mild steel – 130 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	1101	37	92	45	216	132	0.200	0.200	0.1	0.100	0.09
3/16 (0.188)	3	1101	37	92	45	171	134	0.220	0.220	0.2	0.110	0.09
1/4 (0.25)	1	1102	37	92	27	120	138	0.220	0.220	0.3	0.110	0.09
5/16 (0.313)	1	1103	37	92	82	117	134	0.240	0.240	0.3	0.110	0.09
3/8 (0.375)	1	1104	37	92	77	88	138	0.240	0.240	0.3	0.110	0.10
1/2 (0.5)	1	1105	37	92	72	64	142	0.260	0.260	0.5	0.110	0.10
5/8 (0.625)	2	1105	37	92	72	54	147	0.300	0.300	0.7	0.150	0.11
3/4 (0.75)	2	1105	37	92	72	41	151	0.300	0.300	1.0	0.150	0.12
1 (1)	2	1105	37	92	72	18	159	0.300	0.300	1.8	0.160	0.15

Mild steel – 170 A O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420513	420365	420261	420260	420258	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	23 / 49	–	78 / 165
Pierce flow	–	33 / 69	96 / 202
Cut flow	–	32 / 69	51 / 108

Metric

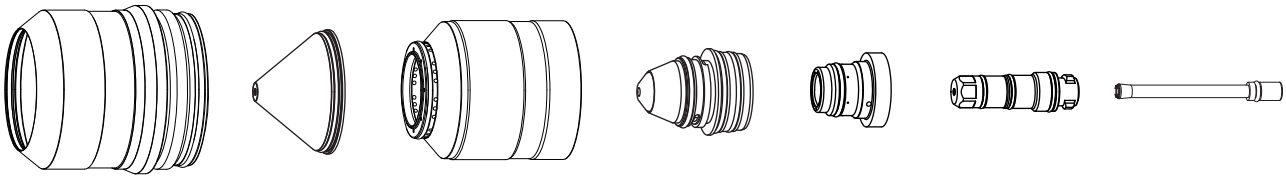
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
5	3	1151	45	78	79	5258	124	6.60	6.60	0.3	2.79	2.6
6	3	1151	45	78	79	4623	126	6.60	6.60	0.3	2.79	2.6
7	3	1151	45	78	79	4335	127	6.60	6.60	0.3	2.79	2.6
8	3	1151	45	78	79	3898	128	6.60	6.60	0.3	2.79	2.6
10	1	1152	45	78	79	3146	129	6.60	6.60	0.3	2.79	2.7
15	1	1153	45	78	77	2070	136	8.13	8.13	0.6	4.06	2.9
20	2	1153	45	78	77	1432	139	8.13	8.13	0.8	4.06	3.2
25	2	1153	45	78	77	1068	145	10.16	10.16	1.0	4.32	3.5

Mild steel – 170 A O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in	in	seconds	in	in
3/16 (0.188)	3	1151	45	78	79	207	124	0.260	0.260	0.3	0.110	0.10
1/4 (0.25)	3	1151	45	78	79	182	126	0.260	0.260	0.3	0.110	0.10
3/8 (0.375)	1	1152	45	78	79	127	129	0.260	0.260	0.3	0.110	0.11
1/2 (0.5)	1	1153	45	78	77	105	132	0.260	0.260	0.5	0.110	0.11
5/8 (0.625)	1	1153	45	78	77	73	138	0.320	0.320	0.6	0.160	0.12
3/4 (0.75)	2	1153	45	78	77	59	138	0.320	0.320	0.8	0.160	0.13
1 (1)	2	1153	45	78	77	41	145	0.400	0.400	1.0	0.170	0.14

Mild steel – 220 A O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420273	420365	420270	420406	420276	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	22/ 46	–	71 / 150
Pierce flow	–	49 / 103	71 / 150
Cut flow	–	49 / 103	99 /210

Metric

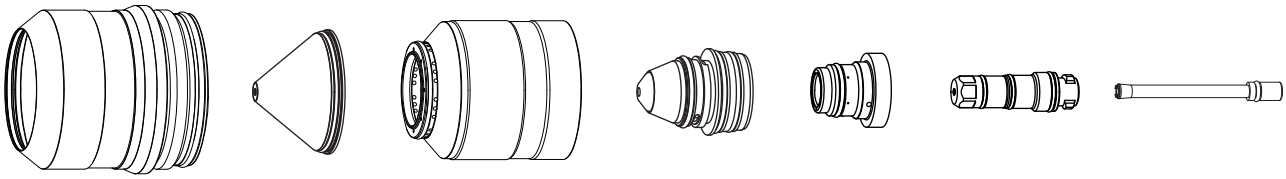
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	1252	30	90	45	5461	160	6.60	6.60	0.3	3.05	2.8
7	3	1252	30	90	45	5045	160	6.60	6.60	0.3	3.05	2.9
8	3	1252	30	90	45	4405	159	6.60	6.60	0.3	3.05	3.0
10	3	1253	30	90	38	3334	158	6.60	6.60	0.3	3.05	3.1
15	1	1251	30	90	26	2610	157	6.35	6.35	0.4	2.80	3.1
20	1	1251	30	90	26	1829	162	6.35	6.35	0.8	3.05	3.4
25	2	1251	30	90	26	1429	164	6.35	6.35	1.1	3.05	3.5
30	2	1251	30	90	26	1029	171	6.35	7.62	1.7	4.57	3.9

Mild steel – 220 A O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	1252	30	90	45	215	160	0.260	0.260	0.3	0.120	0.11
3/8 (0.375)	3	1253	30	90	38	135	158	0.260	0.260	0.3	0.120	0.12
1/2 (0.5)	1	1254	30	90	32	110	156	0.250	0.250	0.4	0.110	0.12
5/8 (0.625)	1	1251	30	90	26	100	158	0.250	0.250	0.5	0.110	0.12
3/4 (0.75)	1	1251	30	90	26	75	162	0.250	0.250	0.7	0.120	0.13
1 (1)	2	1251	30	90	26	55	164	0.250	0.300	1.1	0.120	0.14
1-1/4 (1.25)	2	1251	30	90	26	35	174	0.250	0.300	1.9	0.180	0.16

Mild steel – 300 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420491	420365	420279	420406	420276	420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	21 / 45	–	57 / 122
Pierce flow	–	45 / 95	57 / 122
Cut flow	–	45 / 95	57 / 122

Metric

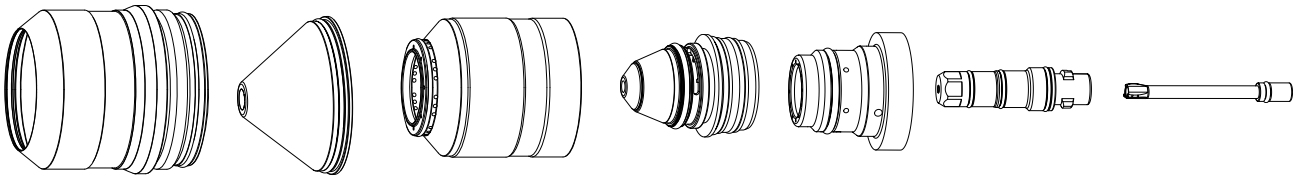
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
15	3	1206	35	90	26	3100	147	6.50	6.50	0.4	3.80	4.8
20	1	1206	35	90	26	2300	149	6.50	6.50	0.6	3.30	4.2
25	1	1206	35	90	26	1760	153	6.50	7.50	0.8	3.30	5.2
30	2	1206	35	90	26	1380	158	6.50	7.50	1.5	3.30	5.8
32	2	1206	35	90	26	1240	159	6.50	7.50	1.8	4.50	5.1
38	2	1206	35	90	26	920	162	6.50	7.50	2.7	4.50	5.5
40	2	1206	35	90	26	850	165	6.50	7.50	3.2	4.50	5.8

Mild steel – 300 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	1206	35	90	26	140	145	0.250	0.250	0.4	0.150	0.15
5/8 (0.625)	1	1206	35	90	26	115	148	0.250	0.250	0.5	0.130	0.15
3/4 (0.75)	1	1206	35	90	26	95	148	0.250	0.250	0.7	0.130	0.16
1 (1)	1	1206	35	90	26	65	154	0.250	0.300	1.0	0.130	0.18
1-1/4 (1.25)	2	1206	35	90	26	50	159	0.250	0.300	1.8	0.180	0.19
1-1/2 (1.5)	2	1206	35	90	26	35	163	0.250	0.300	3.0	0.180	0.20

Mild steel – 460 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	520002	420365	520001	420819	420834	420368

Flow rate (lpm/scfh)				
	N_2	O_2	Air	Ar
Pre flow	36 / 76	–	71 / 150	–
Pierce flow	–	58 / 122	123 / 260	109 / 230
Cut flow	–	58 / 122	97 / 205	74 / 157

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
12	3	1283	55	73	44	4440	163	7.1	7.1	0.4	6.3	4.3
15	3	1283	55	73	44	3970	164	7.1	7.1	0.5	6.3	4.1
20	3	1282	55	73	44	2820	157	7.2	7.5	0.7	3.6	4.4
25	1	1281	55	73	44	2210	162	8.0	9.9	0.9	4.0	4.6
30	1	1281	55	73	44	1800	163	8.8	12.0	1.1	4.4	5.0
32	1	1281	55	73	44	1640	164	9.1	12.8	1.2	4.5	5.1
35	1	1281	55	73	44	1440	165	9.6	14.0	1.4	4.5	5.3
38	1	1281	55	73	44	1230	166	10.1	15.2	1.6	4.5	5.5
40	1	1281	55	73	44	1170	168	10.1	16.3	1.9	4.5	5.6
45	2	1284	55	73	44	990	172	10.1	19.6	2.6	4.7	5.7

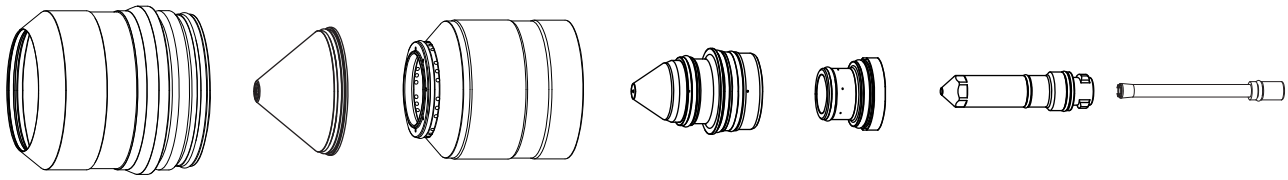
Mild steel – 460 A – O_2 Plasma / Air Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	1283	55	73	44	171	163	0.280	0.280	0.4	0.250	0.166
5/8 (0.625)	3	1283	55	73	44	151	164	0.280	0.280	0.5	0.250	0.160
3/4 (0.75)	3	1282	55	73	44	116	156	0.280	0.280	0.6	0.140	0.169
7/8 (0.875)	3	1282	55	73	44	101	160	0.300	0.340	0.8	0.150	0.176
1 (1)	1	1281	55	73	44	86	162	0.320	0.400	0.9	0.160	0.182
1-1/4 (1.25)	1	1281	55	73	44	66	164	0.360	0.500	1.2	0.180	0.200
1-1/2 (1.5)	1	1281	55	73	44	49	166	0.400	0.600	1.6	0.180	0.216
1-3/4 (1.75)	2	1284	55	73	44	41	172	0.400	0.750	2.5	0.180	0.225

Cut charts for non-ferrous (stainless steel) processes – underwater

Stainless steel – 80 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420309	420365	420306	420323	420303	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	51 / 108
Pierce flow	67 / 134
Cut flow	68 / 144

Metric

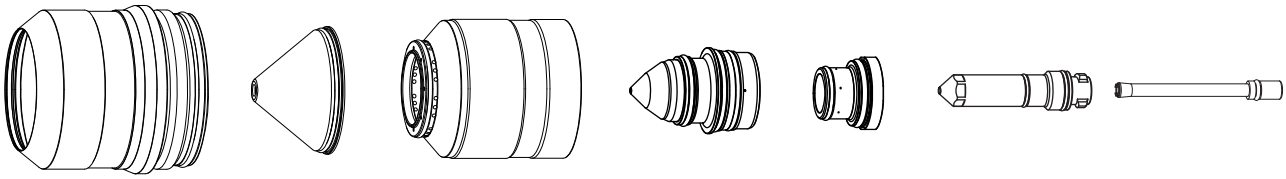
Workpiece thickness		SYSTEM SETTINGS				CNC SETTINGS						
	Cut category	XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2006	30	80	45	3400	119	5.00	5.00	0.3	2.50	1.6
4	3	2006	30	80	45	2861	119	5.00	5.00	0.3	2.50	1.5
5	3	2007	30	80	40	2388	120	5.00	5.00	0.3	2.00	1.5
6	1	2007	30	80	40	1983	118	5.00	5.00	0.5	2.00	1.5
7	1	2007	30	80	40	1644	120	5.00	5.00	0.5	2.00	1.6
8	1	2007	30	80	40	1371	124	5.00	5.00	0.6	2.00	1.6
10	1	2007	30	80	40	1027	128	5.00	5.00	0.6	2.00	1.8

Stainless steel – 80 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	2006	30	80	45	124	119	0.200	0.200	0.3	0.080	0.06
3/16 (0.1875)	3	2006	30	80	45	99	120	0.200	0.200	0.3	0.080	0.06
1/4 (0.25)	1	2007	30	80	40	73	118	0.200	0.200	0.5	0.080	0.06
5/16 (0.313)	1	2007	30	80	40	54	124	0.200	0.200	0.6	0.080	0.07
3/8 (0.375)	1	2007	30	80	40	43	127	0.200	0.200	0.6	0.080	0.07

Stainless steel – 80 A – N_2 Plasma / H_2O Shield – underwater (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420300	420365	420290	420323	420303	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	30 / 64	0.2 / 3*
Pierce flow	37 / 79	0.2 / 3*
Cut flow	24 / 51	0.4 / 6*

* Gallons per hour (gph)

Metric

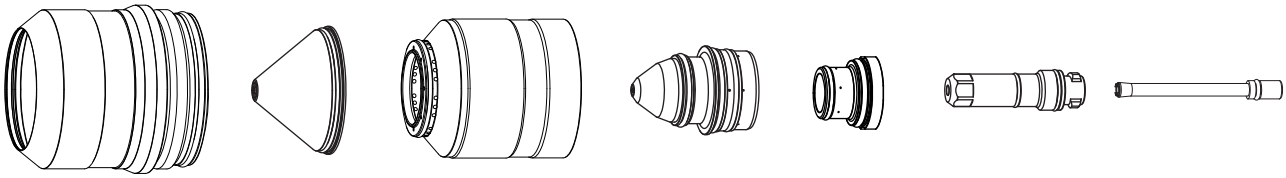
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2029	10	80	30	3404	120	5.00	5.00	0.3	2.00	1.6
4	3	2029	10	80	30	2866	124	5.00	5.00	0.3	2.00	1.5
5	3	2029	10	80	30	2387	126	5.00	5.00	0.5	2.00	1.5
6	1	2029	10	80	30	1969	129	5.00	5.00	0.6	2.00	1.6
7	1	2029	10	80	30	1609	130	5.00	5.00	0.6	2.00	1.8
8	1	2029	10	80	30	1310	132	5.00	5.00	0.6	2.00	1.9
10	1	2029	10	80	30	889	135	5.00	5.00	0.8	2.00	1.9
12	2	2029	10	80	30	706	137	5.00	5.00	0.8	2.00	1.8

Shield Stainless steel – 80 A – N_2 Plasma / H_2O Shield – underwater (VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
10 GA (0.135)	3	2029	10	80	30	124	122	0.200	0.200	0.3	0.080	0.06
3/16 (0.1875)	3	2029	10	80	30	99	124	0.200	0.200	0.3	0.080	0.06
1/4 (0.25)	1	2029	10	80	30	72	131	0.200	0.200	0.5	0.080	0.07
5/16 (0.313)	1	2029	10	80	30	54	133	0.200	0.200	0.6	0.080	0.08
3/8 (0.375)	1	2029	10	80	30	36	134	0.200	0.200	0.6	0.080	0.08
1/2 (0.5)	2	2029	10	80	30	28	137	0.200	0.200	0.8	0.080	0.07

Stainless steel – 130 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420318	420365	420315	420314	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	92 / 195
Pierce flow	150 / 320
Cut flow	135 / 287

Metric

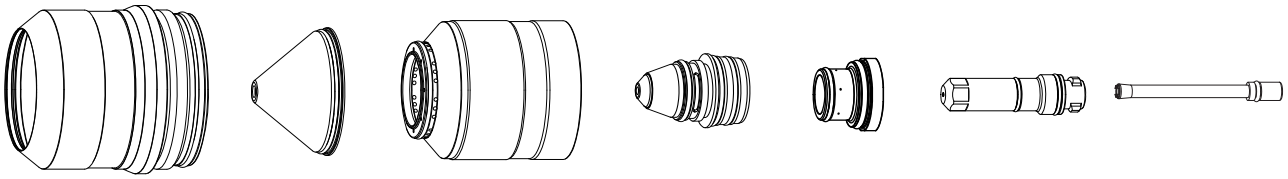
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2051	52	90	52	2184	160	6.10	6.10	0.4	2.54	2.2
7	3	2051	52	90	52	2052	161	6.10	6.10	0.4	2.54	2.2
8	3	2051	52	90	52	1834	163	6.10	6.10	0.5	2.54	2.2
10	1	2051	52	90	52	1466	166	6.10	6.10	0.5	2.54	2.3
12	1	2051	52	90	52	1321	167	6.10	6.10	0.6	2.54	2.3
15	2	2051	52	90	52	935	168	6.10	6.10	0.7	3.05	2.4
20	2	2051	52	90	52	533	180	6.10	6.10	1.3	3.05	2.8

Stainless steel – 130 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2051	52	90	52	86	160	0.240	0.240	0.4	0.100	0.09
5/16 (0.313)	3	2051	52	90	52	73	163	0.240	0.240	0.4	0.100	0.09
3/8 (0.375)	1	2051	52	90	52	59	166	0.240	0.240	0.5	0.100	0.09
1/2 (0.5)	1	2051	52	90	52	50	167	0.240	0.240	0.6	0.100	0.09
5/8 (0.625)	2	2051	52	90	52	32	169	0.240	0.240	0.7	0.120	0.09
3/4 (0.75)	2	2051	52	90	52	23	175	0.240	0.240	1.2	0.120	0.10

Stainless steel – 130 A – N_2 Plasma / H_2O Shield – underwater (VWI and OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420469	420365	420315	420314	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	38	0.42 / 6.5*
Pierce flow	97	0.5 / 8*
Cut flow	34 / 73	0.5 / 8*

* Gallons per hour (gph)

Metric

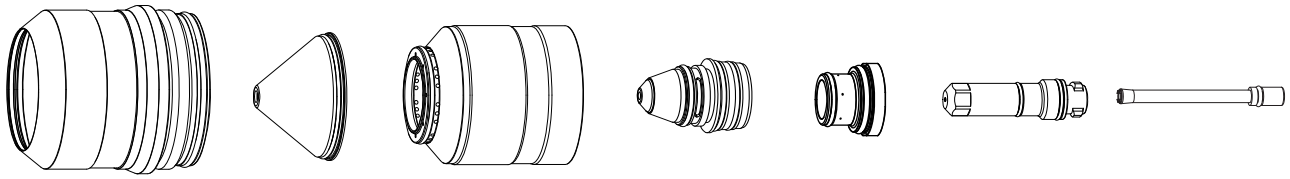
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2052	25	90	25	2184	166	5.08	5.08	0.2	2.54	2.2
7	3	2052	25	90	25	2057	168	5.08	5.08	0.3	2.54	2.3
8	3	2052	25	90	25	1846	172	5.08	5.08	0.4	2.54	2.5
10	1	2052	25	90	25	1486	178	5.08	5.08	0.5	2.54	2.7
12	1	2052	25	90	25	1326	177	5.08	5.08	0.6	2.54	2.6
15	2	2052	25	90	25	852	181	6.35	6.35	0.7	3.05	3.0
20	2	2052	25	90	25	406	184	6.35	6.35	1.3	3.05	3.6

Stainless steel – 130 A – N_2 Plasma / H_2O Shield – underwater (VWI and OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/4 (0.25)	3	2052	25	90	25	86	166	0.200	0.200	0.2	0.100	0.09
5/16 (0.313)	3	2052	25	90	25	73	172	0.200	0.200	0.4	0.100	0.10
3/8 (0.375)	1	2052	25	90	25	60	178	0.200	0.200	0.5	0.100	0.11
1/2 (0.5)	1	2052	25	90	25	50	177	0.200	0.200	0.6	0.100	0.10
5/8 (0.625)	2	2052	25	90	25	27	183	0.250	0.250	0.8	0.120	0.13
3/4 (0.75)	2	2052	25	90	25	18	183	0.250	0.250	1.3	0.120	0.13

Stainless steel – 170 A – N_2 Plasma / H_2O Shield – underwater (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420472	420365	420324	420314	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	19 / 40	0.4 / 6*
Pierce flow	47 / 100	0.5 / 8*
Cut flow	33 /71	0.4 / 7*

* Gallons per hour (gph)

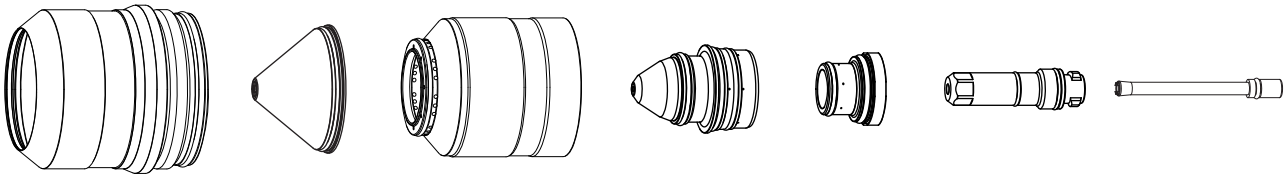
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2058	30	90	30	1799	175	5.08	5.08	0.4	2.54	2.8
12	1	2058	30	90	30	1595	177	5.08	5.08	0.5	2.54	2.9
15	1	2058	30	90	30	1256	178	5.08	5.08	0.5	2.54	3.0
20	2	2058	30	90	30	869	185	7.62	7.62	1.3	2.54	3.4
25	2	2058	30	90	30	582	191	7.62	15.24	3.0	3.05	3.8

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
3/8 (0.375)	3	2058	30	90	30	73	175	0.200	0.200	0.4	0.100	0.11
1/2 (0.5)	1	2058	30	90	30	60	178	0.200	0.200	0.5	0.100	0.11
5/8 (0.625)	1	2058	30	90	30	45	178	0.200	0.200	0.5	0.100	0.12
3/4 (0.75)	2	2058	30	90	30	36	184	0.300	0.300	1.0	0.100	0.13
1 (1)	2	2058	30	90	30	22	192	0.300	0.600	4.0	0.120	0.15

Stainless steel – 170 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420327	420365	420324	420314	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	99 / 210
Pierce flow	168 / 355
Cut flow	151 / 322

Metric

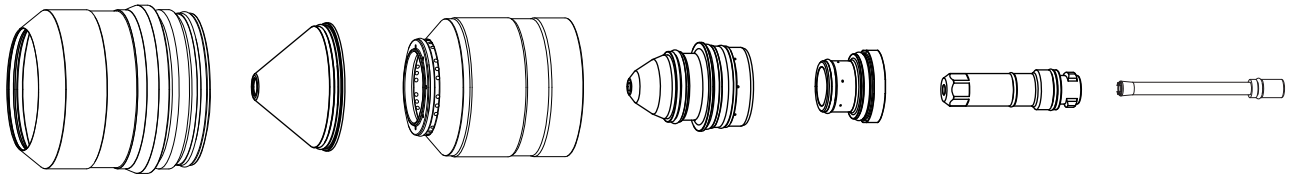
Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2057	54	90	54	1813	164	6.10	6.10	0.3	2.54	2.6
12	1	2057	54	90	54	1667	164	6.10	6.10	0.4	2.54	2.5
15	1	2057	54	90	54	1115	169	6.10	6.10	0.6	2.54	2.8
20	2	2057	54	90	54	641	177	6.10	6.10	1.3	3.05	3.2
25	2	2057	54	90	54	368	186	6.10	6.10	1.7	3.81	3.6

Stainless steel – 170 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix) (continued)

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in	in.
3/8 (0.375)	3	2057	54	90	54	73	164	0.240	0.240	0.3	0.100	0.10
7/16 (0.438)	3	2057	54	90	54	68	164	0.240	0.240	0.4	0.100	0.10
1/2 (0.5)	1	2057	54	90	54	64	164	0.240	0.240	0.4	0.100	0.10
9/16 (0.563)	1	2057	54	90	54	50	168	0.240	0.240	0.6	0.100	0.11
5/8 (0.625)	1	2057	54	90	54	36	171	0.240	0.240	0.7	0.100	0.11
3/4 (0.75)	2	2057	54	90	54	27	175	0.240	0.240	1.2	0.120	0.12
7/8 (0.875)	2	2057	54	90	54	20	181	0.240	0.240	1.4	0.135	0.13
1 (1)	2	2057	54	90	54	14	187	0.240	0.240	1.7	0.150	0.14

Stainless steel – 300 A – N_2 Plasma / N_2 Shield – underwater (Core, CorePlus, VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420362	420365	420359	420323	420356	420368

Flow rate (lpm/scfh)	
	N_2
Pre flow	106 / 225
Pierce flow	181 / 385
Cut flow	164 / 351

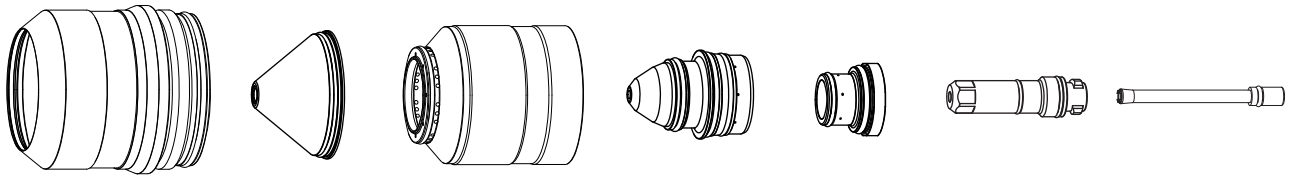
Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2054	54	90	54	2997	168	7.62	7.62	0.4	4.32	3.1
15	3	2054	54	90	54	2424	174	7.62	7.62	0.5	4.32	3.2
20	1	2054	54	90	54	1663	179	7.62	7.62	0.9	5.08	3.4
25	1	2054	54	90	54	1299	182	7.62	12.70	1.5	5.08	3.5
30	2	2054	54	90	54	986	185	7.62	15.24	2.0	5.08	3.6
32	2	2054	54	90	54	889	186	7.62	15.24	2.2	5.08	3.6

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in	seconds	in.	in.
1/2 (0.5)	3	2054	54	90	54	107	172	0.300	0.300	0.4	0.170	0.12
5/8 (0.625)	3	2054	54	90	54	91	175	0.300	0.300	0.5	0.170	0.13
3/4 (0.75)	1	2054	54	90	54	68	178	0.300	0.300	0.8	0.200	0.13
1 (1)	1	2054	54	90	54	50	182	0.300	0.500	1.5	0.200	0.14
1-1/4 (1.25)	2	2054	54	90	54	35	186	0.300	0.600	2.2	0.200	0.14

Stainless steel – 300 A – N_2 Plasma / H_2O Shield – underwater (VWI, OptiMix)



Shield retaining cap	Shield	Nozzle retaining cap	Nozzle	Swirl ring	Electrode	Water tube
420200	420475	420365	420359	420323	420356	420368

Flow rate (lpm/scfh)		
	N_2	H_2O
Pre flow	31 / 65	0.42 / 6.5*
Pierce flow	75 / 160	0.5 / 8*
Cut flow	59 / 126	0.5 / 8*

* Gallons per hour (gph)

Metric

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2055	22	90	22	1956	174	7.62	7.62	0.5	3.81	3.5
15	3	2055	22	90	22	1795	182	7.62	7.62	0.9	3.81	3.5
20	1	2055	22	90	22	1547	188	7.62	7.62	1.0	5.08	3.7
25	1	2055	22	90	22	1184	191	7.62	7.62	1.2	5.08	3.9
30	2	2055	22	90	22	904	193	7.62	15.24	1.9	5.08	4.0
32	2	2055	22	90	22	813	194	7.62	15.24	2.0	5.08	4.7

English

Workpiece thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in.						in./min	volts	in.	in.	seconds	in.	in.
1/2 (0.5)	3	2055	22	90	22	77	181	0.300	0.300	0.5	0.150	0.14
5/8 (0.625)	3	2055	22	90	22	68	182	0.300	0.300	1.0	0.150	0.14
3/4 (0.75)	1	2055	22	90	22	64	188	0.300	0.300	1.0	0.200	0.15
1 (1)	1	2055	22	90	22	45	191	0.300	0.300	1.2	0.200	0.15
1-1/4 (1.25)	2	2055	22	90	22	32	194	0.300	0.600	2.0	0.200	0.16

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Torch geometry for bevel cutting

The XPR consumable parts are designed to maintain a nearly-constant tool center point. Torch length and shield-face diameter vary with cutting current, as shown in Table 6.

Refer to Table 6 to see the bevel geometry that you can expect with XPR torches that have ferrous (mild steel) and non-ferrous (stainless steel/aluminum) consumable parts.

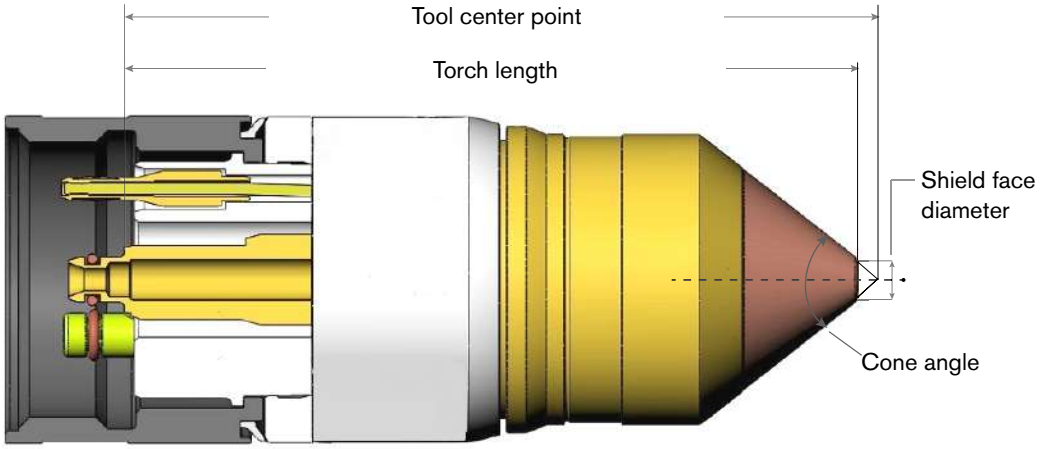

Table 6 – Bevel geometries for example ferrous and non-ferrous processes

Bevel geometry* for ferrous (mild steel) processes				
Mild steel process	**Cone angle**	**Shield face diameter**	**Torch length**	**Tool center point**
460 A mild steel	76°	8.64 mm (0.340 in.)	128.27 mm (5.050 in.)	133.81 mm (5.268 in.)
300 A mild steel	76°	8.64 mm (0.340 in.)	128.27 mm (5.050 in.)	133.81 mm (5.268 in.)
220 A mild steel	76°	7.37 mm (0.290 in.)	129.08 mm (5.082 in.)	133.81 mm (5.268 in.)
170 A mild steel	76°	7.24 mm (0.285 in.)	128.45 mm (5.057 in.)	133.07 mm (5.239 in.)

Bevel geometry* for ferrous (mild steel) processes				
Mild steel process	**Cone angle**	**Shield face diameter**	**Torch length**	**Tool center point**
130 A mild steel	76°	6.73 mm (0.265 in.)	129.21 mm (5.087 in.)	133.53 mm (5.257 in.)
80 A mild steel	76°	6.10 mm (0.240 in.)	129.92 mm (5.115 in.)	133.83 mm (5.269 in.)
50 A mild steel	76°	5.72 mm (0.225 in.)	130.07 mm (5.121 in.)	133.73 mm (5.265 in.)
30 A mild steel	76°	5.46 mm (0.215 in.)	130.23 mm (5.127 in.)	133.73 mm (5.265 in.)

Bevel geometry* for non-ferrous (stainless steel and aluminum) processes				
Non-ferrous process	**Cone angle**	**Shield face diameter**	**Torch length**	**Tool center point**
460 A non-ferrous	76°	8.71 mm (0.343 in.)	128.27 mm (5.050 in.)	133.86 mm (5.270 in.)
300 A non-ferrous	76°	8.00 mm (0.315 in.)	128.85 mm (5.073 in.)	133.99 mm (5.275 in.)
170 A non-ferrous	76°	7.25 mm (0.285 in.)	128.96 mm (5.077 in.)	133.58 mm (5.259 in.)
130 A non-ferrous	76°	6.60 mm (0.260 in.)	129.06 mm (5.081 in.)	133.27 mm (5.247 in.)
80 A non-ferrous, dry	76°	6.10 mm (0.240 in.)	129.36 mm (5.093 in.)	133.27 mm (5.247 in.)
80 A non-ferrous, wet	76°	6.10 mm (0.240 in.)	129.41 mm (5.095 in.)	133.32 mm (5.249 in.)
60 A non-ferrous, dry	76°	6.10 mm (0.240 in.)	129.36 mm (5.093 in.)	133.27 mm (5.247 in.)
60 A non-ferrous, wet	76°	6.10 mm (0.240 in.)	129.41 mm (5.095 in.)	133.32 mm (5.249 in.)
40 A non-ferrous, dry	76°	6.10 mm (0.240 in.)	129.36 mm (5.093 in.)	133.27 mm (5.247 in.)

* Bevel geometries are based on the torch dimensions and features described in the instruction manual that came with your XPR cutting system.