Hypertherm®

XPR™

Cut charts

Instruction Manual

809830 | Revision 1 | English

Environmental stewardship is one of Hypertherm's core values, and it is critical to our success and our customers' success. We are striving to reduce the environmental impact of everything we do. For more information: www.hypertherm.com/environment.

XPR

Instruction Manual

809830
Revision 1

English
Original instructions

August 2018

Hypertherm, Inc.
Hanover, NH 03755 USA
www.hypertherm.com

Hypertherm, Inc.
Etna Road, P.O. Box 5010
Hanover, NH 03755 USA
603-643-3441 Tel (Main Office)
603-643-5352 Fax (All Departments)
info@hypertherm.com (Main Office Email)
800-643-9878 Tel (Technical Service)
technical.service@hypertherm.com (Technical Service Email)
800-737-2978 Tel (Customer Service)
customer.service@hypertherm.com (Customer Service Email)
866-643-7711 Tel (Return Materials Authorization)
877-371-2876 Fax (Return Materials Authorization)
return.materials@hypertherm.com (RMA email)

Hypertherm México, S.A. de C.V.
Avenida Toluca No. 444, Anexo 1,
Colonia Olivar de los Padres
Delegación Álvaro Obregón
México, D.F. C.P. 01780
52 55 5681 8109 Tel
52 55 5683 2127 Fax
Soporte.Tecnico@hypertherm.com (Technical Service Email)

Hypertherm Plasmatechnik GmbH
Sophie-Scholl-Platz 5
63452 Hanau
Germany
00 800 33 24 97 37 Tel
00 800 49 73 73 29 Fax
31 (0) 165 596900 Tel (Technical Service)
00 800 4973 7843 Tel (Technical Service)
technicalservice.emea@hypertherm.com (Technical Service Email)

Hypertherm (Singapore) Pte Ltd.
82 Genting Lane
Media Centre
Annexe Block #A01-01
Singapore 349567, Republic of Singapore
65 6841 2489 Tel
65 6841 2490 Fax
Marketing.asia@hypertherm.com (Marketing Email)
TechSupportAPAC@hypertherm.com (Technical Service Email)

Hypertherm Japan Ltd.
Level 9, Edobori Center Building
2-1-1 Edobori, Nishi-ku
Osaka 550-0002 Japan
81 6 6225 1183 Tel
81 6 6225 1184 Fax
HTJapan.info@hypertherm.com (Main Office Email)
TechSupportAPAC@hypertherm.com (Technical Service Email)

Hypertherm Europe B.V.
Vaartveld 9, 4704 SE
Roosendaal, Nederland
31 165 596907 Tel
31 165 596901 Fax
31 165 596908 Tel (Marketing)
31 (0) 165 596900 Tel (Technical Service)
00 800 4973 7843 Tel (Technical Service)
technicalservice.emea@hypertherm.com
(Technical Service Email)

Hypertherm (Shanghai) Trading Co., Ltd.
B301, 495 ShangZhong Road
Shanghai, 200231
PR China
86-21-80231122 Tel
86-21-80231120 Fax
86-21-80231128 Tel (Technical Service)
techsupport.china@hypertherm.com
(Technical Service Email)

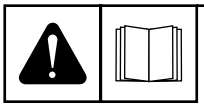
South America & Central America: Hypertherm Brasil Ltda.
Rua Bras Cubas, 231 – Jardim Maia
Guarulhos, SP – Brasil
CEP 07115-030
55 11 2409 2636 Tel
tecnico.sa@hypertherm.com (Technical Service Email)

Hypertherm Korea Branch
#3904. APEC-ro 17. Heaundae-gu. Busan.
Korea 48060
82 (0)51 747 0358 Tel
82 (0)51 701 0358 Fax
Marketing.korea@hypertherm.com (Marketing Email)
TechSupportAPAC@hypertherm.com
(Technical Service Email)

Hypertherm Pty Limited
GPO Box 4836
Sydney NSW 2001, Australia
61 (0) 437 606 995 Tel
61 7 3219 9010 Fax
au.sales@Hypertherm.com (Main Office Email)
TechSupportAPAC@hypertherm.com
(Technical Service Email)

Hypertherm (India) Thermal Cutting Pvt. Ltd
A-18 / B-1 Extension,
Mohan Co-Operative Industrial Estate,
Mathura Road, New Delhi 110044, India
91-11-40521201/ 2/ 3 Tel
91-11 40521204 Fax
HTIndia.info@hypertherm.com (Main Office Email)
TechSupportAPAC@hypertherm.com
(Technical Service Email)

Contents



ENGLISH

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

Copies of the manuals may accompany the product in electronic and printed formats. You can also obtain copies of the manuals, in all languages available for each manual, from the "Documents library" at www.hypertherm.com.

DEUTSCH / GERMAN

WARNUNG! Bevor Sie ein Hypertherm-Gerät in Betrieb nehmen, lesen Sie bitte die Sicherheitsanweisungen in Ihrer Bedienungsanleitung sowie im *Handbuch für Sicherheit und Übereinstimmung* (80669C). Das Nichtbefolgen der Sicherheitsanweisungen kann zu Verletzungen von Personen oder Schäden am Gerät führen.

Bedienungsanleitungen und Handbücher können dem Gerät in elektronischer Form oder als Druckversion beiliegen. Alle Handbücher und Anleitungen können in den jeweils verfügbaren Sprachen auch in der „Dokumente-Bibliothek" unter www.hypertherm.com heruntergeladen werden.

FRANÇAIS / FRENCH

AVERTISSEMENT! Avant d'utiliser tout équipement Hypertherm, lire les consignes de sécurité importantes dans le manuel de votre produit et dans le *Manuel de sécurité et de conformité* (80669C). Le non-respect des consignes de sécurité peut engendrer des blessures physiques ou des dommages à l'équipement.

Des copies de ces manuels peuvent accompagner le produit en format électronique et papier. Vous pouvez également obtenir des copies de chaque manuel dans toutes les langues disponibles à partir de la « Bibliothèque de documents » sur www.hypertherm.com.

ESPAÑOL / SPANISH

¡ADVERTENCIA! Antes de operar cualquier equipo Hypertherm, leer las instrucciones de seguridad del manual de su producto y del *Manual de Seguridad y Cumplimiento* (80669C). No cumplir las instrucciones de seguridad podría dar lugar a lesiones personales o daño a los equipos.

Pueden venir copias de los manuales en formato electrónico e impreso junto con el producto. También se pueden obtener copias de los manuales, en todos los idiomas disponibles para cada manual, de la "Biblioteca de documentos" en www.hypertherm.com.

ITALIANO / ITALIAN

AVVERTENZA! Prima di usare un'attrezzatura Hypertherm, leggere le istruzioni sulla sicurezza nel manuale del prodotto e nel *Manuale sulla sicurezza e la conformità* (80669C). Il mancato rispetto delle istruzioni sulla sicurezza può causare lesioni personali o danni all'attrezzatura.

Il prodotto può essere accompagnato da copie elettroniche e cartacee del manuale. È anche possibile ottenere copie del manuale, in tutte le lingue disponibili per ogni manuale, dall'"Archivio documenti" all'indirizzo www.hypertherm.com.

NEDERLANDS / DUTCH

WAARSCHUWING! Lees voordat u Hypertherm-apparatuur gebruikt de veiligheidsinstructies in de producthandleiding en in de *Veiligheids- en nalevingshandleiding* (80669C). Het niet volgen van de veiligheidsinstructies kan resulteren in persoonlijk letsel of schade aan apparatuur.

De handleidingen kunnen in elektronische en gedrukte vorm met het product worden meegeleverd. De handleidingen, elke handleiding beschikbaar in alle talen, zijn ook verkrijgbaar via de "Documentenbibliotheek" op www.hypertherm.com.

DANSK / DANISH

ADVARSEL! Inden Hypertherm udstyr tages i brug skal sikkerhedsinstruktionerne i produktets manual og i *Manual om sikkerhed og overholdelse af krav* (80669C), gennemlæses. Følges sikkerhedsvejledningen ikke kan det resultere i personskade eller beskadigelse af udstyret.

Kopier af manualerne kan ledsage produktet i elektroniske og trykte formater. Du kan også få kopier af manualer, på alle sprog der er til rådighed for hver manuel, fra "Dokumentbiblioteket" på www.hypertherm.com.

PORTUGUÊS / PORTUGUESE

ADVERTÊNCIA! Antes de operar qualquer equipamento Hypertherm, leia as instruções de segurança no manual do seu produto e no *Manual de Segurança e de Conformidade* (80669C). Não seguir as instruções de segurança pode resultar em lesões corporais ou danos ao equipamento.

Cópias dos manuais podem acompanhar os produtos nos formatos eletrônico e impresso. Também é possível obter cópias dos manuais em todos os idiomas disponíveis para cada manual na "Biblioteca de documentos" em www.hypertherm.com.

日本語 / JAPANESE

警告！Hypertherm 機器を操作する前に、安全に関する重要な情報について、この製品説明書にある安全情報、および製品に同梱されている別冊の「安全とコンプライアンスマニュアル」(80669C) をお読みください。安全情報に従わないと怪我や装置の損傷を招くことがあります。

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。各説明書は、www.hypertherm.com の「ドキュメントライブラリ」から各言語で入手できます。

简体中文 / CHINESE (SIMPLIFIED)

警告！ 在操作任何海宝设备之前，请阅读产品手册和 《安全和法规遵守手册》 (80669C) 中的安全操作说明。若未能遵循安全操作说明，可能会造成人员受伤或设备损坏。

随产品提供的手册可能提供电子版和印刷版两种格式。您也可从 "Documents library" （文档资料库）中获取每本手册所有可用语言的副本，网址为 www.hypertherm.com.

NORSK / NORWEGIAN

ADVARSEL! Før du bruker noe Hypertherm-utstyr, må du lese sikkerhetsinstruksjonene i produktets håndbok og i *Håndboken om sikkerhet og samsvar* (80669C). Unnlatelse av å følge sikkerhetsinstruksjoner kan føre til personskade eller skade på utstyr.

Eksemplarer av håndbøkene kan medfølge produktet i elektroniske og trykte utgaver. Du kan også få eksemplarer av håndbøkene i alle tilgjengelige språk for hver håndbok fra dokumentbiblioteket på www.hypertherm.com.

SVENSKA / SWEDISH

VARNING! Läs häftet *säkerhetsinformationen i din produkts säkerhets- och efterlevnadsmanual* (80669C) för viktig säkerhetsinformation innan du använder eller underhåller Hypertherm-utrustning. Underlåtenhet att följa dessa säkerhetsinstruktionerkan resultera i personskador eller skador på utrustningen.

Kopior av manualen kan medfölja produkten i elektronisk och tryckform. Du hittar även kopior av manualerna i alla tillgängliga språk i dokumentbiblioteket (Documents library) på www.hypertherm.com.

한국어 / KOREAN

경고! Hypertherm 장비를 사용하기 전에 제품 설명서와 안전 및 규정 준수 설명서 (80669C)에 나와 있는 안전 지침을 읽으십시오. 안전 지침을 준수하지 않으면 신체 부상이나 장비 손상을 초래할 수 있습니다.

전자 형식과 인쇄된 형식으로 설명서 사본이 제품과 함께 제공될 수 있습니다. www.hypertherm.com 의 'Documents library (문서 라이브러리)'에서도 모든 언어로 이용할 수 있는 설명서 사본을 얻을수 있습니다.

ČESKY / CZECH

VAROVÁNÍ! Před uvedením jakéhokoliv zařízení Hypertherm do provozu si přečtěte bezpečnostní pokyny v příručce k produktu a v *Manuálu pro bezpečnost a dodržování předpisů* (80669C). Nedodržování bezpečnostních pokynů může mít za následek zranění osob nebo poškození majetku.

Kopie příruček a manuálů mohou být součástí dodávky produktu, a to v elektronické i tištěné formě. Kopie příruček a manuálů ve všech jazykových verzích, v nichž byly dané příručky a manuály vytvořeny, naleznete v „Knihovně dokumentů“ na webových stránkách www.hypertherm.com.

POLSKI / POLISH

OSTRZEŻENIE! Przed rozpoczęciem obsługi jakiegokolwiek systemu firmy Hypertherm należy się zapoznać z instrukcjami bezpieczeństwa zamieszczonymi w podręczniku produktu oraz w *Podręczniku bezpieczeństwa i zgodności* (80669C). Nieprzestrzeganie instrukcji bezpieczeństwa może skutkować obrażeniami ciała i uszkodzeniem sprzętu.

Do produktu mogą być dołączone kopie podręczników w formacie elektronicznym i drukowanym. Kopie podręczników, w każdym udostępnionym języku, można również znaleźć w „Bibliotece dokumentów” pod adresem www.hypertherm.com.

РУССКИЙ / RUSSIAN

БЕРЕГИСЬ! Перед работой с любым оборудованием Hypertherm ознакомьтесь с инструкциями по безопасности, представленными в руководстве, которое поставляется вместе с продуктом, а также в *Руководстве по безопасности и соответствию* (80669J). Невыполнение инструкций по безопасности может привести к телесным повреждениям или повреждению оборудования.

Копии руководств, которые поставляются вместе с продуктом, могут быть представлены в электронном и бумажном виде. Копии руководств на всех языках, на которые переведено то или иное руководство, можно также загрузить в разделе «Библиотека документов» на веб-сайте www.hypertherm.com.

SUOMI / FINNISH

VAROITUS! Ennen minkään Hypertherm-laitteen käyttöä lue tuotteen käyttöoppaassa olevat turvallisuusohjeet ja *turvallisuus- ja vaatimustenmukaisuusohje* (80669C). Turvallisuusohjeiden laiminlyönti voi aiheuttaa henkilökohtaisen loukkaantumisen tai laitevahingon.

Käyttöoppaiden kopiot voivat olla tuotteen mukana elektronisessa ja tulostetussa muodossa. Voit saada käyttöoppaiden kopiot kaikilla kielillä ”latauskirjastosta”, joka on osoitteessa www.hypertherm.com.

БЪЛГАРСКИ / BULGARIAN

ПРЕДУПРЕЖДЕНИЕ! Преди да работите с което и да е оборудване Hypertherm, прочетете инструкциите за безопасност в ръководството на вашия продукт и „Инструкция за безопасност и съответствие“ (80669C). Неспазването на инструкциите за безопасност би могло да доведе до телесно нараняване или до повреда на оборудването.

Копия на ръководствата може да придружават продукта в електронен и в печатен формат. Можете да получите копия на ръководствата, предлагани на всички езици, от „Documents library“ (Библиотека за документи) на адрес www.hypertherm.com.

ROMÂNĂ / ROMANIAN

AVERTIZARE! Înainte de utilizarea oricărui echipament Hypertherm, citiți instrucțiunile de siguranță din cadrul manualului produsului și din cadrul *Manualului de siguranță și conformitate* (80669C). Nerespectarea instrucțiunilor de siguranță pot rezulta în vătămare personală sau în avarierea echipamentului.

Produsul poate fi însoțit de copii ale manualului în format tipărit și electronic. De asemenea, dumneavoastră puteți obține copii ale manualelor, în toate limbile disponibile pentru fiecare manual, din cadrul secțiunii „Bibliotecă documente” aflată pe site-ul www.hypertherm.com.

TÜRKÇE / TURKISH

UYARI! Bir Hypertherm ekipmanını çalıştırmadan önce, ürün kullanım kılavuzunda ve *Güvenlik ve Uyumluluk Kılavuzu'nda* (80669C) yer alan güvenlik talimatlarını okuyun. Güvenlik talimatlarına uyulmaması durumunda kişisel yaralanmalar veya ekipman hasarı meydana gelebilir.

Kılavuzların kopyaları, elektronik ve basılı formatta ürünle birlikte verilebilir. Her biri tüm dillerde yayınlanan kılavuzların kopyalarını www.hypertherm.com adresindeki “Documents library” (Dosyalar kitaplığı) başlığından da elde edebilirsiniz.

MAGYAR / HUNGARIAN

VIGYÁZAT! Mielőtt bármilyen Hypertherm berendezést üzemeltetne, olvassa el a biztonsági információkat a termék kézikönyvében és a *Biztonsági és szabálykövetési kézikönyvben* (80669C). A biztonági utasítások betartásának elmulasztása személyi sérüléshez vagy a berendezés károsodásához vezethet.

A termékhez a kézikönyv példányai elektronikus és nyomtatott formában is mellékelve lehetnek. A kézikönyvek példányai (minden nyelven) a www.hypertherm.com weboldalon a „Documents library” (Dokumentum könyvtár) részben is beszerezhetők.

ΕΛΛΗΝΙΚΑ / 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). Η μη τήρηση των οδηγιών ασφαλείας μπορεί να επιφέρει σωματική βλάβη ή ζημιά στον εξοπλισμό.

Αντίγραφα των εγχειριδίων μπορεί να συνοδεύουν το προϊόν σε ηλεκτρονική και έντυπη μορφή. Μπορείτε, επίσης, να λάβετε αντίγραφα των εγχειριδίων σε όλες τις γλώσσες που διατίθενται για κάθε εγχειρίδιο από την ψηφιακή βιβλιοθήκη εγγράφων (Documents library) στη διαδικτυακή τοποθεσία www.hypertherm.com.

繁體中文 / CHINESE (TRADITIONAL)

警告！ 在操作任何 Hypertherm 設備前，請閱讀您產品手冊和 《安全和法務遵從手冊》(80669C) 內的安全指示。不遵守安全指示可能會導致人身傷害或設備損壞。

手冊複本可能以電子和印刷格式隨附產品提供。您也可以在 www.hypertherm.com 的 「文檔資料庫」內獲取所有手冊的多語種複本。

SLOVENŠČINA / SLOVENIAN

OPOZORILO! Pred uporabo katerekoli Hyperthermove opreme preberite varnostna navodila v priročniku vašega izdelka ter v *Priročniku za varnost in skladnost* (80669C). Neupoštevanje navodil za uporabo lahko povzroči telesne poškodbe ali materialno škodo.

Izdelku so lahko priloženi izvodi priročnikov v elektronski ali tiskani obliki. Izvode priročnikov v vseh razpoložljivih jezikih si lahko prenesete tudi iz knjižnice dokumentov “Documents library” na naslovu www.hypertherm.com.

SRPSKI / SERBIAN

UPOZORENJE! Pre rukovanja bilo kojom Hyperthermovom opremom pročitajte uputstva o bezbednosti u svom priručniku za proizvod i u *Priručniku o bezbednosti i usaglašenosti* (80669C). Oglušavanje o praćenje uputstava o bezbednosti može da ima za posledicu ličnu povredu ili oštećenje opreme.

Može se dogoditi da kopije priručnika prate proizvod u elektronskom i štampanom formatu. Takođe možete da pronađete kopije priručnika, na svim jezicima koji su dostupni za svaki od priručnika, u “Biblioteci dokumenata” (“Documents library”) na www.hypertherm.com.

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). V prípade nedodržania bezpečnostných pokynov môže dôjsť k ujme na zdraví alebo poškodeniu zariadenia.

Kópia návodu, ktorá je dodávaná s produktom, môže mať elektronickú alebo tlačenú podobu. Kópie návodov, vo všetkých dostupných jazykoch, sú k dispozícii aj v sekcii z „knižnice Dokumenty“ na www.hypertherm.com.

Cut Charts

Overview

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

Graphics in this section are for reference only.

Hypertherm's cut charts are designed to give the best quality with minimal dross. However, because of differences in cutting system installations and materials, it can be necessary to adjust the settings to get the results that you want.

If you have questions about how to make adjustments to process settings and consumable choices, contact your cutting machine supplier or regional Hypertherm Technical Service team.

Pierce delay time

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

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

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 materials 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.

Kerf compensation

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

Cut category

Use the cut category in the cut charts to help you choose the process that matches your needs for cut quality and speed based on material type and thickness.

Edge starts are recommended for processes that have a cut category of 4 or 5.

Arc voltage

The arc voltage that is in the cut charts is for reference and estimated on an average cutting system configuration. Lead length can affect actual 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 that you want.

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 offset commands to make incremental changes to the original value. Manual selection of process settings is not recommended.

Cut charts for HyDefinition vented processes are listed by amperage.

How to use cut charts

Electronic cut charts are available on the cut chart screen of your CNC or XPR web interface.

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

Hard copy cut charts are available in this manual. They start on page 18.

The cut charts in this manual are for reference purposes. Always use the electronic cut charts that appear on your CNC or XPR web interface for the most complete and accurate process-selection information.

Standard-position cutting, marking, and piercing cut charts

Use the cut charts for guidance about process selection, especially if the default process ID settings are not satisfactory for your application.

The pre-programmed settings that come with a process ID are designed to give the best balance between quality and productivity with consumables that are in average condition.

The results that you want from a process can influence process selection. In some cases, cut quality is important. In other cases, speed is important. Often, the best choice balances these requirements. (See *Process selection* on page 17.)

Process core thickness (PCT)

The cut chart for every cutting process contains a range of possible thicknesses. Process engineers work to optimize a range of thicknesses (usually in the middle of the overall range of thicknesses). This optimized range is called the process core thicknesses (PCT). Thicknesses greater and less than the PCT can have varied results relative to cut quality, cut speed, and piercing capability.

Process categories

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

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

Table 1 on page 15 describes the results that you can expect with different process category numbers.

Bevel cutting

All consumable processes are capable of up to 52° bevel cuts. Choose bevel cutting settings (such as speed) from the cut chart, based on the effective thickness of the actual bevel cut through the material.

It can be necessary to compensate the arc voltage, based on the actual 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 desired bevel angles and part sizes. For more information, see *True Bevel technology – XPR bevel compensation charts* (809890) and *Torch geometry for bevel cutting* on page 104.

Hypertherm recommends a clearance of 2.5 mm (0.098 in.) between the torch and the workpiece during bevel cutting.

Arc voltage

Arc voltages provided in the cut charts are for reference only. Actual arc voltages will vary with system configuration.

Pierce settings

Pierce settings in the cut charts are based on standard-position torch angles (at a 90° angle to the workpiece).

Table 1 – Process category options and expected quality-speed results for ferrous (mild steel) processes

Process category number	Process category condition	Category description	Quality	Speed
Category 1	Process Core Thickness (PCT)	▪ Best overall balance of productivity and cut quality. ▪ The process is optimized for this thickness. ▪ Expect cut speeds that range from 2,030 mm/min – 3,810 mm/min (80 in/min – 150 in/min). ▪ Dross free, in most cases.	Very good	Very good
Category 2	Greater than PCT	▪ Good choice when edge quality is more important than speed. ▪ Expect cut speeds that are slower than 2,030 mm/min (80 in/min). ▪ Expect low-speed dross.	Very good – excellent	Lower
Category 3	Less than PCT	▪ Good choice when speed is more important than edge quality. ▪ Expect cut speeds that are faster than 3,810 mm/min (150 in/min). ▪ Dross-free results in most cases.	Lower	Higher
Category 4	Edge Start Only	▪ Edge start is required. ▪ Thick, low-speed dross is likely.	Good	Low
Category 5	Severance	▪ This is the maximum thickness for these processes. ▪ Edge start is required. ▪ Expect cut speeds that are slower than 250 mm/min (10 in/min). ▪ Cut-edge quality can be rough. ▪ Expect significant dross.	Very low	Very low

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. See the cut charts for guidance.

Table 2 – Process category options and expected quality-speed results for non-ferrous processes

Process category number	Process category condition	Category description	Quality	Speed
Category 1	Process Core Thickness (PCT)	▪ Whenever 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 – excellent	Very good
Category 2	Greater 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 – very good	Lower
Category 3	Less 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 required. ▪ Darker edge color is possible with stainless steel. ▪ Thick dross is likely.	Good	Low
Category 5	Severance	▪ This is the maximum thickness for these processes. ▪ Edge start is required. ▪ 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

In general, Hypertherm recommends dross-free processes. Non-ferrous dross is very difficult to remove. Depending on the gas-connect console, the XPR cutting system offers the following non-ferrous cutting processes: Air/Air, N_2/N_2, N_2/H_2O, F5/N_2 and mixed-fuel gas/N_2. See the Cut Charts for guidance.

Process selection

All of the XPR cutting processes have a unique process identification (process ID) number. Each process ID aligns with a specific set of pre-programmed values in the cut chart database in the plasma power supply memory.

Processes in the database can be selected by:

- Material type and thickness
- Cutting current
- Plasma and shield gas types
- Process category

When you select a process ID from the CNC or the Operate screen in the XPR web interface, the cutting system automatically activates the pre-programmed settings for that process based on the values in the database.

On-screen lists of process options let you select, monitor, and control processes directly from the CNC or the Operate screen in the XPR web interface.

Manual selection of process settings is not necessary in most cases. However, you can adjust some pre-programmed settings with override or offset commands, within limits. For information about how to do this, refer to the instruction manual that came with your XPR cutting system.

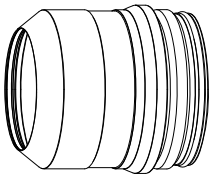
How to use process IDs to access optimal settings

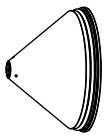
When you select a process ID from the CNC or XPR web interface, you automatically get the optimized settings that Hypertherm recommends for that process.

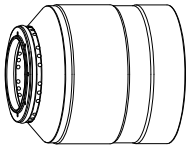
The pre-programmed settings come from Hypertherm's extensive laboratory tests. Because of differences in cutting systems, materials, and consumables, it is sometimes necessary to adjust the settings. However, in most cases, you can expect the best results when you use the default settings that come with a process ID.

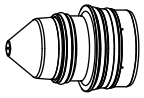
Cut charts for ferrous (mild steel) processes – above water

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

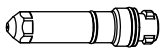

Shield retaining cap
420200


Shield
420228


Nozzle retaining cap
420365


Nozzle
420225


Swirl ring
420407


Electrode
420222


Water tube
420368

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

Metric

Material 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	1.30	1.5
0.8						4217	107			0.2		1.5
1						3604	108			0.3		1.6
1.2						2847	109					1.5
1.5						2198	111					1.6
2						1490	116	3.05	3.05	0.4	1.52	1.7
2.5						1325	116					1.7
3	1					1153	117			0.5		1.8
4	2					908	120	3.37	3.37	0.6		1.9
5						521	123	3.81	3.81	0.7	1.52	2.0

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

English

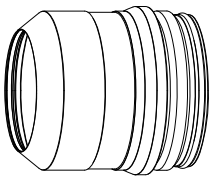
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.018 (26GA)	3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

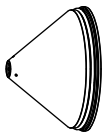
Marking

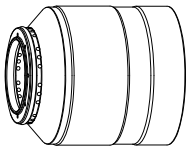
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.9 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.07 in

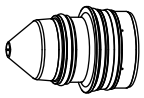
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9010	9	90	10	2.54 mm	2540 mm/min	85 V	1.00 mm
English	Ar	Air	9010	9	90	10	0.100 in	100 in/min	85 V	0.04 in

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

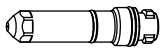

Shield retaining cap
420200


Shield
420237


Nozzle retaining cap
420365


Nozzle
420234


Swirl ring
420233


Electrode
420231


Water tube
420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	20 / 42	–	35 / 74
Pierce flow	20 / 42	–	35 / 74
Cut flow	–	24 / 52	31 / 67

Metric

Material 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						4262	113					1.5
3						3820	113			0.5		1.5
3.5	1					3616	112					1.5
4						3144	113					1.6
5		1061			30	2322	115					1.7
6	2					1919	117	4.06	4.06	0.6	2.03	1.7
7						1622	119					1.8
8						1369	120			0.7		1.8

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

English

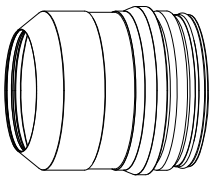
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.105 (12GA)	3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

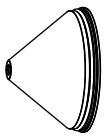
Marking

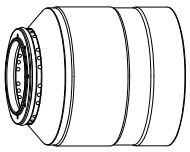
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	2.0 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.08 in

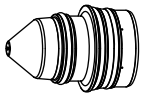
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9018	12	70	10	2.54 mm	2540 mm/min	81 V	1.3 mm
English	Ar	Air	9018	12	70	10	0.100 in	100 in/min	81 V	0.05 in

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


Shield retaining cap
420200


Shield
420246


Nozzle retaining cap
420365


Nozzle
420243


Swirl ring
420242


Electrode
420240

Water tube
420368

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

Metric

Material 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		1002			68	4303	114					1.8
5						3774	114					1.8
6	1	1003			56	3048	116			0.3		1.8
7						2648	117					1.9
8		1004			52	2417	118			0.4		2.0
9						2081	119			0.5		2.1
10	2	1005			46	1807	121	4.37	4.37			2.1
12						1405	123	5.08	5.08	0.7		2.3

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

English

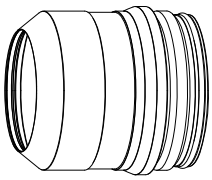
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.135 (10GA)	3	1001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

Marking

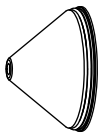
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark width
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.9 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.07 in

	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

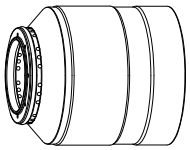
Mild steel – 130 A – O_2 Plasma / Air Shield – above water (Core, VWI, OptiMix)



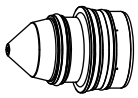
Shield retaining cap
420200



Shield
420255

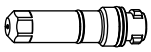


Nozzle retaining cap
420365



Nozzle
420252

Swirl ring
420242



Electrode
420249

Water tube
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

Material 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						5557	134	5.30	5.30	0.1	2.65	2.2
5						4681	134	5.59	5.59	0.2	2.79	2.3
6	1	1102			27	4036	135			0.3		2.3
7		1103			82	3602	134	5.80	5.80			2.3
8						3282	134	6.10	6.10			2.4
10		1104			77	2680	136	6.25	6.25	0.4		2.5
12		1105			72	2200	137	6.60	6.60	0.5		2.6
15	2					1665	142	7.62	7.62	0.7	3.81	2.8
20						1044	149			1.1		3.3
25						546	162			1.8	4.03	4.0
30	4	1106			58	434	165	Edge start		0.3	4.57	4.4
32						398	165					4.6
38	5	1107			50	256	174					5.7

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

English

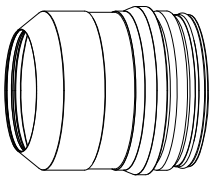
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.135 (10GA)	3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

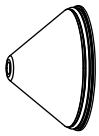
Marking

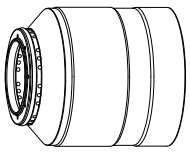
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.9 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.07 in

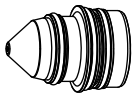
	Plasma gas	Shield gas	Process Id	Mark current	Cutflow		Marking height	Speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9001	15	50	10	3.05 mm	2540 mm/min	78 V	1.4 mm
English	Ar	Air	9001	15	50	10	0.120 in	100 in/min	78 V	0.06 in

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

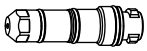

Shield retaining cap
420200

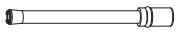

Shield
420513


Nozzle retaining cap
420365


Nozzle
420261


Swirl ring
420260


Electrode
420258


Water tube
420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	23 / 49	–	78 / 165
Pierce flow	–	33 / 69	96 / 202
Cut flow	–	33 / 69	50 / 105

Metric

Material 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						4768	127					2.7
8						4288	128					2.7
10	1	1152				3461	128					2.8
12		1153			77	3061	129			0.5		2.8
15						2277	133	8.13	8.13	0.6	4.06	2.8
20	2					1575	138			0.8		3.3
25						1175	142	10.16	10.16	1.0	4.32	3.6
30		1155			74	867	144			2.5	3.81	4.3
32						752	145			3.0		4.6
38	4					512	151	Edge start		0.3	4.31	4.7
40						462	153				4.32	5.0
44		1156			71	366	157					5.4
50	5					267	162			0.5		5.9

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

English

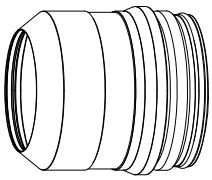
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	1151	45	78	79	200	127	0.260	0.260	0.3	0.110	0.11
5/16	3	1151				170	128					0.11
3/8	1	1152				140	128					0.11
1/2		1153			77	115	129			0.5		0.10
5/8						80	135	0.320	0.320	0.6	0.160	0.11
3/4	2					65	137			0.8		0.13
1	2	1153			77	45	142	0.400	0.400	1.0	0.170	0.14
1-1/4		1155			74	30	145			3.0	0.150	0.18
1-1/2	4					20	151	Edge start		0.3	0.170	0.19
1-3/4		1156			71	14	157					0.22
2	5					10	163			0.5		0.24

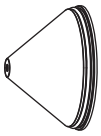
Marking

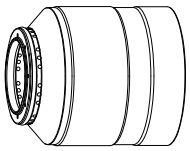
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	2.0 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.08 in

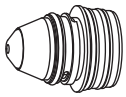
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark width
					Plasma gas	Shield gas				
Metric	Ar	Air	9008	18	15	15	2.54 mm	2540 mm/min	79 V	2.0 mm
English	Ar	Air	9008	18	15	15	0.100 in	100 in/min	79 V	0.08 in

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

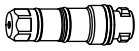

Shield retaining cap
420200

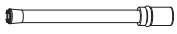

Shield
420491


Nozzle retaining cap
420365


Nozzle
420279


Swirl ring
420406


Electrode
420276


Water tube
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	56 / 120*	45 / 95	57 / 122	–

Metric

Material 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	1202	30	85	22	3940	147	9.50	9.50	0.4	3.80	4.7
15		1201		90	26	3440	148					3.6
20	1					2550	153			0.6	3.30	4.2
25						1950	155		9.50	0.8		4.4
30	2	1203	34		34	1530	157		12.50	1.5		5.1
40						940	166		16.50	3.2	4.50	5.8
50* †		1205	30	85	14	560	175		33.00	8.0	6.40	6.3
50*	4	1204				560	175	Edge start		1.5	4.50	6.3
60*						385	183					6.6
70*	5					250	192				3.30	8.0
80*						165	204					9.5

* N_2 used as shield gas.

† VWI and OptiMix only.

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

English

Material 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*	3	1202	30	85	22	155	147	0.380	0.380	0.4	0.150	0.19
5/8	1	1201		90	26	130	151			0.5	0.130	0.15
3/4						105	154			0.7		0.16
7/8						90	154					0.19
1						75	156			1.0		0.18
1-1/4	2	1203	34		34	55	163		0.500	1.8	0.180	0.20
1-1/2						40	165		0.650	3.0		0.22
1-3/4		1204	30	85	14	30	170		0.850	4.5		0.22
2* †		1205				21	175		1.300	8.0	0.250	0.24
2*	4	1204				21	175	Edge start		1.5		0.24
2-1/4*						17	181				0.180	0.26
2-1/2*						14	185					0.27
2-3/4*	5					10	192					0.31
3*						7	195					0.38

* N_2 used as shield gas.

† VWI and OptiMix only.

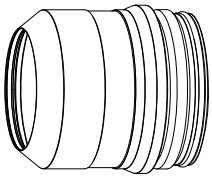
Marking

	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	16	10	10	2.54 mm	6350 mm/min	130 V	2.8 mm
English	N_2	Air	8007	16	10	10	0.100 in	250 in/min	130 V	0.11 in

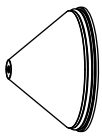
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	Air	9007	22	25	30	2.79 mm	2540 mm/min	70 V	1.8 mm
English	Ar	Air	9007	22	25	30	0.110 in	100 in/min	70 V	0.07 in

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

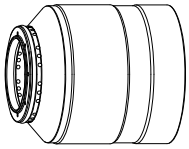
Stainless steel – 40 A – N_2 Plasma / N_2 Shield – above water (Core, VWI, OptiMix)



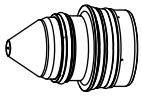
Shield retaining cap
420200



Shield
420291



Nozzle retaining cap
420365



Nozzle
420288

Swirl ring
420314

Electrode
420303

Water tube
420368

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

Metric

Material 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
0.8	3	2015	30	75	85	6100	124	5.08	5.08	0.2	3.60	1.4
1						5715	124				3.50	1.3
1.2						5345	124				3.40	1.3
1.5						4818	122				3.30	1.2
2						4014	127				3.10	1.2
2.5	1	2014		90	68	3302	129			0.3	2.90	1.2
3						2683	130				2.80	1.3
4	2	2013			64	1724	129				2.60	1.3
5		2012			55	1136	129				2.54	1.3
6						918	132			0.6		1.4

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

English

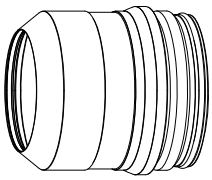
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.036 (20GA)	3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

Marking

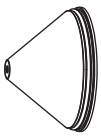
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	2.1 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.08 in

	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9002	9	90	10	2.54 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

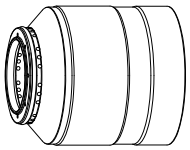
Stainless steel – 60 A – N_2 Plasma / N_2 Shield – above water (Core, VWI, OptiMix)



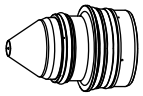
Shield retaining cap
420200



Shield
420309

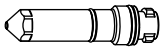


Nozzle retaining cap
420365



Nozzle
420297

Swirl ring
420323



Electrode
420303

Water tube
420368

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

Metric

Material 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	5.08	5.08	0.3	3.20	1.5
3	1					2776	124				2.80	1.5
4						2245	123				2.54	1.5
5		2025			55	1886	124					1.5
6	2	2024			45	1697	126			0.6		1.4

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

English

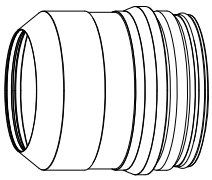
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.105 (12GA)	3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

Marking

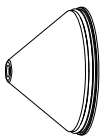
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc Volt	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.54 mm	6350 mm/min	120 V	1.8 mm
English	N_2	N_2	8002	15	25	5	0.100 in	250 in/min	120 V	0.07 in

	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	2.54 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

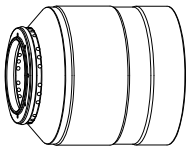
Stainless steel – 60 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



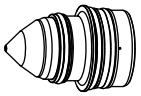
Shield retaining cap
420200



Shield
420300

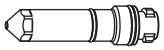


Nozzle retaining cap
420365



Nozzle
420296

Swirl ring
420323



Electrode
420303

Water tube
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)

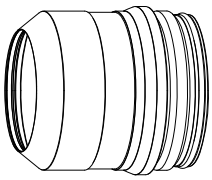
Metric

Material 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	2028	10	80	30	3065	140	5.08	5.08	0.3	2.54	1.5
4						2062	138					1.6
5						1516	136					1.7
6	2					1179	132			0.6		1.9

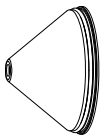
English

Material 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
0.105 (12GA)	3	2028	10	80	30	120	120	0.200	0.200	0.3	0.120	0.06
0.135 (10GA)	1					100	124				0.100	0.06
3/16						80	129					0.06
1/4	2					50	132			0.6		0.07
3/8						20	144			0.8	0.120	0.09

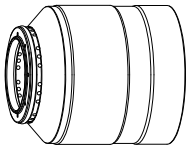
Stainless steel – 60 A – F5 Plasma / N_2 Shield – above water (VWI, OptiMix)



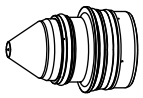
Shield retaining cap
420200



Shield
420309

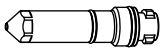


Nozzle retaining cap
420365

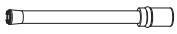


Nozzle
420297

Swirl ring
420323



Electrode
420303



Water tube
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

Material 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	5.08	5.08	0.2	3.20	1.4
3	1	2023	30	82	55	2763	132	5.08	5.08	0.3	3.10	1.4
4	1	2022	30	82	45	2217	132	5.08	5.08	0.3	3.05	1.4
5	1	2021	30	82	40	1869	132	5.08	5.08	0.5	2.90	1.4
6	2	2020	30	82	35	1626	133	5.08	5.08	0.6	2.80	1.4
7	2	2020	30	82	35	1445	133	5.08	5.08	0.6	2.60	1.4
8	2	2020	30	82	35	1305	133	5.08	5.08	0.7	2.54	1.4
10	2	2020	30	82	35	1100	134	5.08	5.08	0.8	2.30	1.4

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

English

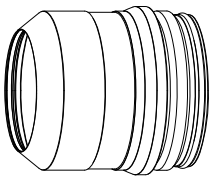
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.105 (12GA)	3	2023	30	82	55	120	132	0.200	0.200	0.3	0.140	0.05
0.135 (10GA)	1	2022			45	95	132				0.120	0.06
3/16		2021			40	80	132				0.100	0.06
1/4	2	2020			35	60	133			0.6		0.06
5/16						52	133			0.7	0.080	0.06
3/8						45	133			0.8		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	2.54 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

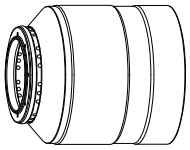
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9003	11	90	10	2.54 mm	2540 mm/min	67 V	1.3 mm
English	Ar	N_2	9003	11	90	10	0.100 in	100 in/min	67 V	0.05 in

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

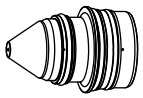


Shield retaining cap
420200

Shield
420309

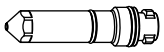


Nozzle retaining cap
420365

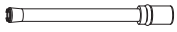


Nozzle
420306

Swirl ring
420323



Electrode
420303



Water tube
420368

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

Metric

Material 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	5.08	5.08	0.3	2.54	1.5
4						3220	118					1.6
5		2007			40	2692	118			0.5	2.03	1.6
6	1					2237	116					1.5
7						1853	117					1.5
8						1543	118			0.6		1.6
9						1304	119					1.6
10	2					1138	121					1.6

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

English

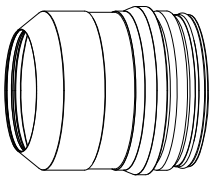
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.135 (10GA)	3	2006	30	80	45	140	118	0.200	0.200	0.3	0.100	0.061
3/16						110	118				0.080	0.064
1/4	1	2007			40	84	116			0.5		0.060
5/16						60	118			0.6		0.031
3/8						48	120					0.064

Marking

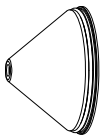
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.54 mm	6350 mm/min	120 V	1.6 mm
English	N_2	N_2	8002	15	25	5	0.100 in	250 in/min	120 V	0.06 in

	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	2.54 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

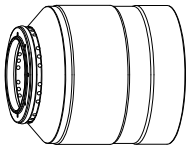
Stainless steel – 80 A – N_2 Plasma / H_2O Shield – above water (VWI, OptiMix)



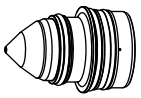
Shield retaining cap
420200



Shield
420300

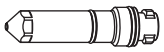


Nozzle retaining cap
420365

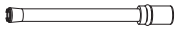


Nozzle
420290

Swirl ring
420323



Electrode
420303



Water tube
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)

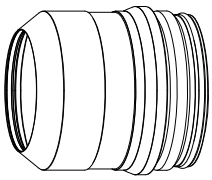
Metric

Material 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	86	30	3820	118	5.08	5.08	0.3	2.03	1.8
4						3216	121					1.7
5						2677	123			0.5		1.8
6	1					2203	126					1.8
7						1794	128					1.9
8						1450	130			0.6		2.0
10	2					956	134					2.1
12		2011				722	137			0.8		2.1

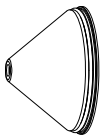
English

Material 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
0.135 (10GA)	3	2010	110	80	30	140	120	0.200	0.200	0.3	0.080	0.07
3/16						110	123					0.07
1/4	1					80	124			0.5		0.07
5/16						60	132			0.6		0.08
3/8						40	134					0.08
7/16	2	2010				31	136			0.8		0.08
1/2		2011		86		28	138					0.08

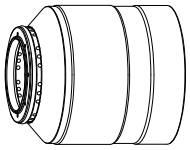
Stainless steel – 80 A – F5 Plasma / N_2 Shield – above water (VWI, OptiMix)



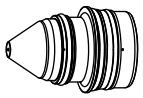
Shield retaining cap
420200



Shield
420309

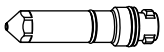


Nozzle retaining cap
420365

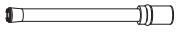


Nozzle
420306

Swirl ring
420323



Electrode
420303



Water tube
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

Material 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	5.08	5.08	0.3	3.05	1.7
4						3052	123					1.7
5		2004			45	2362	122				2.54	1.7
6	1					1916	124			0.5		1.8
8		2003			35	1376	128			0.6	2.03	1.8
10	2	2002	28		28	1065	134					1.7
12		2001	20	86	20	864	135			0.8		1.8

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

English

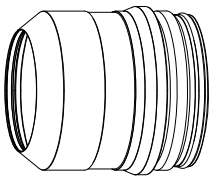
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.135 (10GA)	3	2005	30	80	55	140	124	0.200	0.200	0.3	0.120	0.07
3/16						105	122				0.100	0.07
1/4	1	2004			45	70	124			0.5		0.07
5/16		2003			35	55	129			0.6	0.080	0.07
3/8		2002	28		28	40	132					0.07
7/16	2					36	135			0.8		0.07
1/2		2001	20	86	20	34	134					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	2.54 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

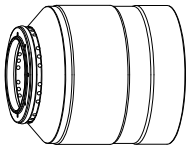
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9003	11	90	10	2.54 mm	2540 mm/min	67 V	1.3 mm
English	Ar	N_2	9003	11	90	10	0.100 in	100 in/min	67 V	0.05 in

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

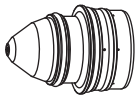


Shield retaining cap
420200

Shield
420318

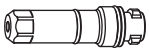


Nozzle retaining cap
420365

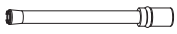


Nozzle
420315

Swirl ring
420314



Electrode
420356



Water tube
420368

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

Metric

Material 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	163	6.10	6.10	0.4	2.54	2.3
7						2257	162					2.3
8						2017	160			0.5		2.4
10	1					1613	159					2.4
12						1453	161			0.6		2.4
15	2					1029	171			0.7	3.05	2.5
20						559	180			1.3		2.8

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

English

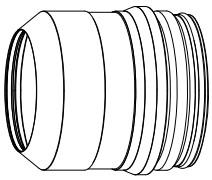
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltages	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	2051	52	90	52	95	163	0.240	0.240	0.4	0.100	0.09
5/16						80	161			0.5		0.09
3/8	1					65	158					0.10
1/2						55	162			0.6		0.09
5/8	2					35	175			0.7	0.120	0.10
3/4						25	178			1.2		0.11

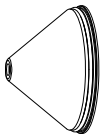
Marking

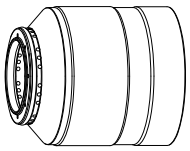
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8004	18	20	15	2.54 mm	6350 mm/min	145 V	1.7 mm
English	N_2	N_2	8004	18	20	15	0.100 in	250 in/min	145 V	0.07 in

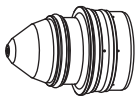
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9004	20	65	15	2.54 mm	3810 mm/min	101 V	2.0 mm
English	Ar	N_2	9004	20	65	15	0.100 in	150 in/min	101 V	0.08 in

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

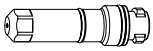

Shield retaining cap
420200


Shield
420469


Nozzle retaining cap
420365


Nozzle
420315


Swirl ring
420314


Electrode
420356


Water tube
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	97 / 205	0.5 / 8*

* Gallons per hour (gph)

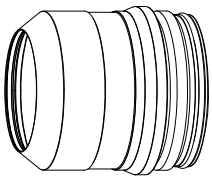
Metric

Material 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	159	5.08	5.08	0.2	2.54	2.3
7						2257	161			0.3	2.54	2.3
8						2017	163			0.4		2.4
10	1					1613	167			0.5		2.4
12						1453	169			0.6		2.5
15	2					937	171	6.35	6.35	0.7	3.05	2.8
20						457	179			1.3		3.6

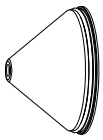
English

Material 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	3	2052	25	90	25	95	159	0.200	0.200	0.2	0.100	0.09
5/16						80	163			0.4		0.09
3/8	1					65	167			0.5		0.09
1/2						55	170			0.6		0.10
5/8	2					30	172	0.250	0.250	0.8	0.120	0.12
3/4						20	177			1.3		0.14

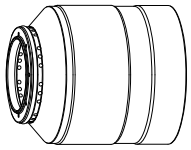
Stainless steel – 130 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



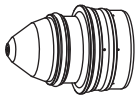
Shield retaining cap
420200



Shield
420318

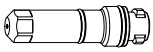


Nozzle retaining cap
420365

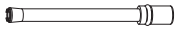


Nozzle
420315

Swirl ring
420323



Electrode
420356



Water tube
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	150 / 320

Metric

Material 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				1	2	3		mm/min	volts	mm	mm	seconds	mm	mm
6	3	2060	52	4	12	24	52	2413	163	5.08	5.08	0.3	2.54	2.6
7								1954	163					2.6
8								1834	164			0.4		2.6
10	1	2053	53	6	10		53	1613	166			0.5		2.6
12								1453	168			0.6		2.6
15	2	2061	50	8	12	20	52	1121	172	6.10	6.10	0.7	3.05	2.7
20								737	175	7.62	7.62	1.5	3.81	2.9

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

English

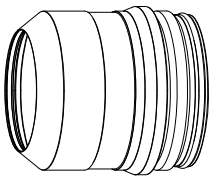
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in				H_2	Ar	N_2		in/min	volts	in	in	seconds	in	in
1/4	3	2060	52	4	12	24	52	80	163	0.200	0.200	0.3	0.100	0.10
5/16								73	164			0.4		0.10
3/8	1	2053	53	6	10		53	65	165			0.5		0.10
1/2								55	169			0.6		0.10
5/8	2	2061	50	8	12	20	52	40	173	0.240	0.240	0.8	0.120	0.11
3/4								30	174	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	2.54 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	0.06 in

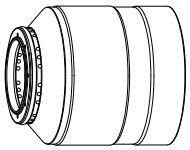
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9004	20	65	15	2.54 mm	3810 mm/min	101 V	2.0 mm
English	Ar	N_2	9004	20	65	15	0.100 in	150 in/min	101 V	0.08 in

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

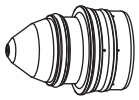


Shield retaining cap
420200

Shield
420327

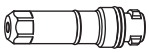


Nozzle retaining cap
420365

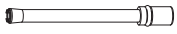


Nozzle
420324

Swirl ring
420314



Electrode
420356



Water tube
420368

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

Metric

Material 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					1834	165			0.4		2.6
15						1226	168			0.6		2.8
20	2					705	177	7.62	7.62	2.5	3.43	3.2
25						405	189		15.24	4.0	3.81	3.6
30	4					289	194	Edge start		0.5		3.6

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

English

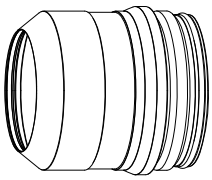
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
3/8	3	2057	54	90	54	80	165	0.240	0.240	0.3	0.100	0.11
1/2	1					70	165			0.4		0.10
5/8						40	169			0.7		0.11
3/4	2					30	175	0.300	0.300	2.5	0.120	0.12
1						15	190		0.600	4.0	0.150	0.14
1-1/4	4					10	196	Edge start		0.7		0.14

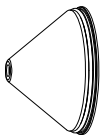
Marking

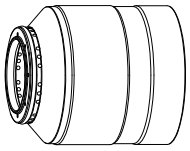
	Plasma gas	Shield gas	Process ID	Mark Current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.54 mm	6350 mm/min	121 V	2.0 mm
English	N_2	N_2	8005	18	20	15	0.100 in	250 in/min	121 V	0.08 in

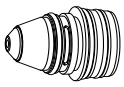
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9005	18	55	15	2.54 mm	3810 mm/min	96 V	2.0 mm
English	Ar	N_2	9005	18	55	15	0.100 in	150 in/min	96 V	0.08 in

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

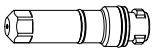

Shield retaining cap
420200

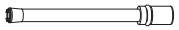

Shield
420472


Nozzle retaining cap
420365


Nozzle
420324


Swirl ring
420314


Electrode
420356


Water tube
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	47 / 100	0.5 / 8*

* Gallons per hour (gph)

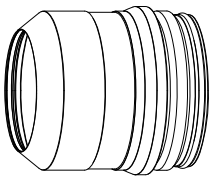
Metric

Material 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					1735	172			0.5		2.8
15						1375	170					3.0
20	2					978	174	7.62	7.62	3.3		3.2
25						778	183		15.24	3.0	3.05	4.1
30	4					633	189	Edge start		0.7	3.81	4.4
32						578	191			0.8		4.5
38						434	195			1.0		4.7

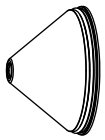
English

Material 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	3	2058	30	90	30	80	167	0.200	0.200	0.4	0.100	0.11
1/2	1					65	173			0.5		0.11
5/8						50	169					0.12
3/4	2					40	172	0.300	0.300	1.0		0.12
1						30	184		0.600	3.0	0.120	0.16
1-1/4	4					23	191	Edge start		0.8	0.150	0.18
1-1/2						17	195			1.0		0.19

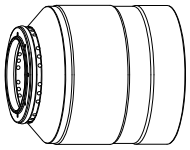
Stainless steel – 170 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



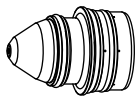
Shield retaining cap
420200



Shield
420327

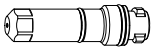


Nozzle retaining cap
420365

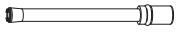


Nozzle
420324

Swirl ring
420323



Electrode
420356



Water tube
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	162 / 345

Metric

Material 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							1735	174			0.5		2.9
15								1375	169					2.9
20	2	2062			10	24		940	183	7.62	7.62	1.4		3.6
25		2063		8	6	26		540	192		15.24	3.8	3.05	4.0
30		2064			12	20		398	198			4.7	4.57	4.2
32								352	200			5.0		4.4
38	4							256	206	Edge start		0.5		4.7

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

English

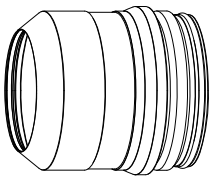
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in				H_2	Ar	N_2		in/min	volts	in	in	seconds	in	in
3/8	3	2059	54	6	8	26	54	80	168	0.200	0.200	0.4	0.100	0.12
1/2	1							65	176			0.5		0.11
5/8								50	167					0.12
3/4	2	2062			10	24		40	181	0.300		1.0		0.14
1		2063		8	6	26		20	193		0.600	4.0	0.120	0.16
1-1/4		2064			12	20		14	200			5.0		0.17
1-1/2	4							10	206	Edge start		0.5		0.19

Marking

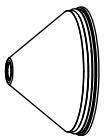
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.54 mm	6350 mm/min	121 V	0.08 mm
English	N_2	N_2	8005	18	20	15	0.098 in	250 in/min	121 V	2.0 in

	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	2.54 mm	3810 mm/min	96 V	0.07 mm
English	Ar	N_2	9005	18	55	15	0.098 in	150 in/min	96 V	1.8 in

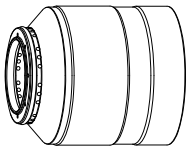
Stainless steel – 300 A – N_2 Plasma / N_2 Shield – above water (Core, VWI, OptiMix)



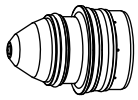
Shield retaining cap
420200



Shield
420362

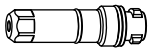


Nozzle retaining cap
420365

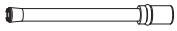


Nozzle
420359

Swirl ring
420323



Electrode
420356



Water tube
420368

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

Metric

Material 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						2666	168			0.5		3.1
20	1					1829	172			0.9	5.08	3.5
25						1429	177		12.70	1.5		3.4
30	2					1084	180		15.24	2.0		4.0
32						947	182			2.2		4.2
38	4	2100			58	515	194	Edge start		0.8		4.2
40						455	196					4.1
44						343	201			0.9	6.35	3.9
50	5					264	204			1.0		6.0

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

English

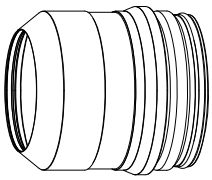
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/2	3	2054	54	90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

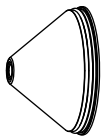
Marking

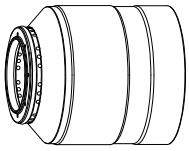
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8006	18	15	25	2.54 mm	2540 mm/min	135 V	1.5 mm
English	N_2	N_2	8006	18	15	25	0.100 in	100 in/min	135 V	0.06 in

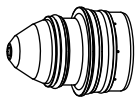
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9006	22	55	15	2.54 mm	2540 mm/min	92 V	2.8 mm
English	Ar	N_2	9006	22	55	15	0.100 in	100 in/min	92 V	0.11 in

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

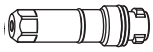

Shield retaining cap
420200

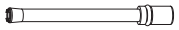

Shield
420475


Nozzle retaining cap
420365


Nozzle
420359


Swirl ring
420323


Electrode
420356


Water tube
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	75 / 160	0.5 / 8*

* Gallons per hour (gph)

Metric

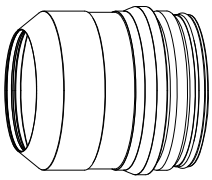
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2055	22	90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

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

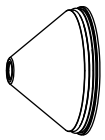
English

Material 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	3	2055	22	90	22	85	174	0.300	0.300	0.5	0.150	0.14
5/8						75	176			1.0		0.14
3/4	1					70	180				0.200	0.15
1						50	183			1.2		0.17
1-1/4	2					35	191		0.600	2.0		0.19
1-1/2						25	201		0.700	3.5		0.21
1-3/4	4					22	203	Edge start		0.5	0.250	0.21
2						15	211			1.0		0.23

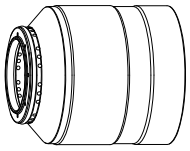
Stainless steel – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



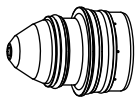
Shield retaining cap
420200



Shield
420362

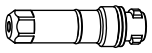


Nozzle retaining cap
420365

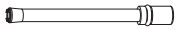


Nozzle
420359

Swirl ring
420358



Electrode
420356



Water tube
420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	118 / 250
Pierce flow	24 / 51	48 / 102	150 / 320
Cut flow	24 / 51	48 / 102	150 / 320

Metric

Material 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	2056	3	54	18	24	18	54	2032	171	8.89	8.89	0.4	5.08	4.3
15								1848	172			0.6		4.3
20		1		24	21	15		1340	186			0.8		4.6
25								1040	187			1.3		4.7
30		2						924	188		15.24	2.5		5.0
38	2065			18	24	18		639	190		17.78	3.5		4.8
40		4						597	185	Edge start		0.8		4.6
50	2066			12	48	0		441	180			0.9	6.35	5.4
60								289	184			0.9		4.6
70		5						202	193			1.3		4.7

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

English

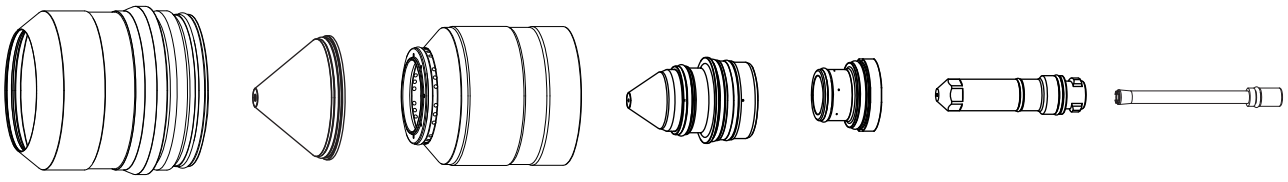
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas	in/min	volts	in	in	seconds	in	in
in				N_2	Ar	N_2								
1/2	3	2056	54	18	24	18	54	80	171	0.350	0.350	0.4	0.200	0.17
5/8								70	173			0.7		0.17
3/4	1			24	21	15		55	186			0.8		0.18
1								40	187			1.2		0.19
1-1/4	2							35	189		0.600	2.8		0.20
1 -1/2		2065		18	24	18		25	190		0.700	3.5		0.19
1-3/4	4	2066		12	48	0		20	172	Edge start		0.8		0.17
2								17	181				0.250	0.22
2-1/4								13	183			0.9		0.19
2-1/2	5							10	185			1.0		0.17
2-3/4								8	193			1.3		0.18
3								6	200			1.5		0.20

	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	2.54 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	2.54 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

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

Aluminum – 40 A – Air Plasma / Air Shield – above water (Core, 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

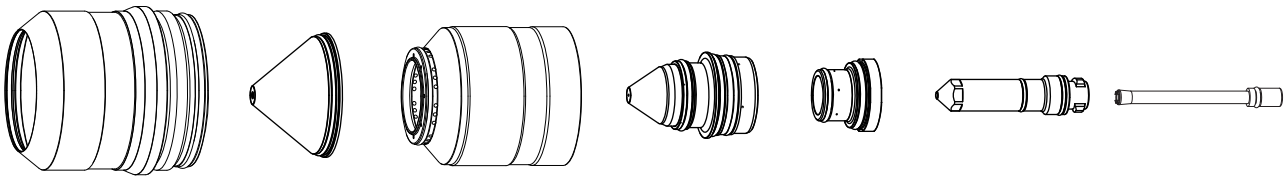
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
1.5	3	2019	30	90	85	4799	137	5.08	5.08	0.2	3.05	1.5
2						3964	135					1.4
2.5	1	2018			68	3230	133			0.3		1.3
3						2596	132				2.70	1.3
4	2	2017			64	1632	131				2.54	1.2
5		2016			55	1070	131					1.3
6						911	135			0.6		1.4

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

English

Material 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
0.036 (20GA)	3	2019	30	90	85	240	137	0.200	0.200	0.2	0.120	0.07
0.051 (16GA)						210	137					0.06
0.064 (14GA)						180	137					0.07
0.081 (12GA)						160	135					0.05
0.102 (10GA)	1	2018			68	120	132			0.3		0.05
1/8		2017			64	85	132				0.100	0.05
3/16	2	2016			55	60	130					0.05
1/4						32	137			0.6		0.06

Aluminum – 40 A – N_2 Plasma / N_2 Shield – above water (Core)



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

Material 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
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
1.5	3	2015	30	75	85	4781	131	5.08	5.08	0.2	3.05	1.3
2						3494	132					1.3
2.5	1	2014		90	68	2740	132			0.3		1.3
3						2246	131				2.70	1.3
4	2	2013			64	1641	130				2.54	1.2
5		2012			55	1287	131					1.2
6						1055	137			0.6		1.3

Aluminum – 40 A – N_2 Plasma / N_2 Shield – above water (Core) (continued)

English

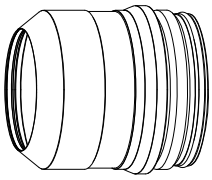
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.036 (20GA)	3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

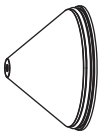
Marking

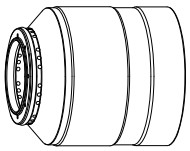
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8002	15	25	5	2.54 mm	6350 mm/min	120 V	2.1 mm
English	N_2	N_2	8002	15	25	5	0.100 in	250 in/min	120 V	0.08 in

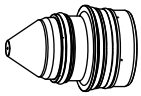
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9011	12	90	10	2.54 mm	2540 mm/min	76 V	0.8 mm
English	Ar	N_2	9011	12	90	10	0.100 in	100 in/min	76 V	0.03 in

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

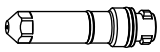

Shield retaining cap
420200


Shield
420309


Nozzle retaining cap
420365


Nozzle
420297


Swirl ring
420323


Electrode
420294


Water tube
420368

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

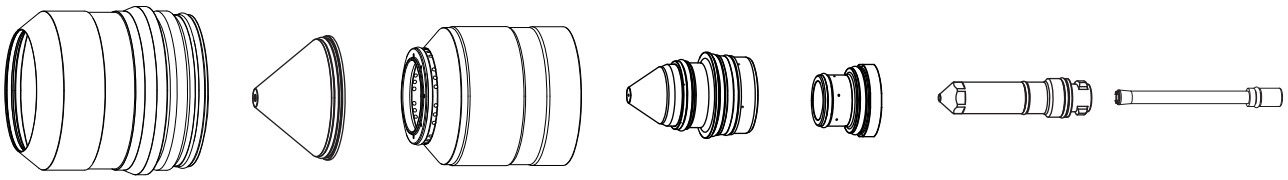
Metric

Material 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
3	1	2027	30	80	45	2688	130	5.08	5.08	0.3	2.54	1.7
4						2229	130					1.6
5						1928	131					1.6
6	2					1713	131					1.5

English

Material 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
in				Plasma gas	Shield gas	in/min	volts	in	in	seconds	in	in
0.102 (10GA)	3	2027	30	80	45	120	130	0.200	0.200	0.3	0.100	0.07
1/8	1					95	130					0.06
3/16						80	129					0.06
1/4	2					65	132					0.06

Aluminum – 60 A – N_2 Plasma / N_2 Shield – above water (Core, 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

Material 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	123	5.08	5.08	0.3	3.20	1.6
4						2245	124				2.54	1.5
5		2025			55	1886	125					1.5
6	2	2024			45	1697	125			0.6		1.4

English

Material 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
0.102 (10GA)	30	2026	30	82	65	120	131	0.200	0.200	0.3	0.120	0.07
0.125	1				65	100	128					0.06
3/16		2025			55	80	131				0.100	0.06
1/4	2	2024			45	60	132			0.6		0.06

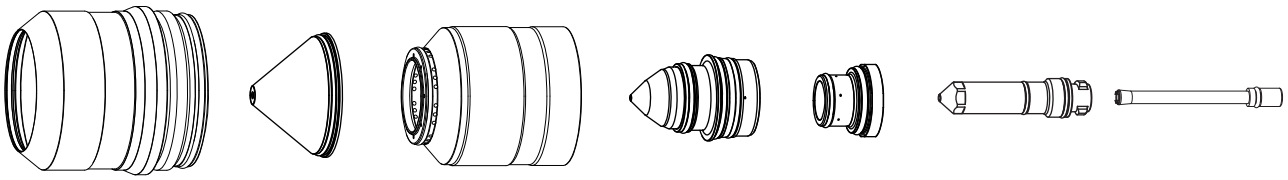
Aluminum – 60 A – N_2 Plasma / N_2 Shield – above water (Core, VWI, OptiMix) (continued)

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	2.54 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	2.54 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)

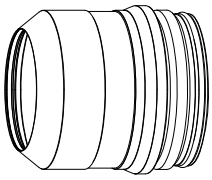
Metric

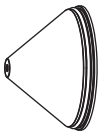
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutlow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
3	1	2028	10	80	30	2754	122	5.08	5.08	0.3	3.05	1.4
4						2402	124				2.54	1.4
5						2050	126					1.4
6	2					1698	128			0.6	3.05	1.5

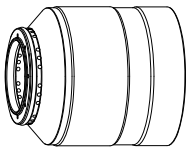
English

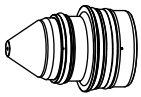
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR Process ID	Shield pierce setting	Cutlow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
in				Plasma gas	Shield gas	in/min	volts	in	in	seconds	in	in
0.102 (10GA)	3	2028	10	80	30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

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

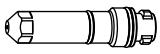

Shield retaining cap
420200


Shield
420309


Nozzle retaining cap
420365


Nozzle
420306


Swirl ring
420323


Electrode
420294


Water tube
420368

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

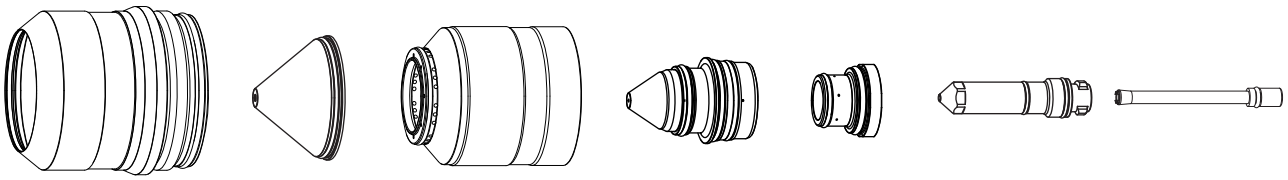
Metric

Material 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	5.08	5.08	0.3	2.03	1.7
4						3143	129					1.6
5		2009			40	2520	129					1.5
6	1					2005	127			0.5		1.5
8						1297	128			0.6		1.6
10	2					1019	131					1.7

English

Material 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	3	2008	30	80	55	100	130	0.200	0.200	0.3	0.080	0.06
1/4	1	2009			40	70	126			0.5		0.06
5/16						55	128			0.6		0.06
3/8						40	130					0.07

Aluminum – 80 A – N_2 Plasma / N_2 Shield – above water (Core, 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 / 114

Metric

Material 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	5.08	5.08	0.3	2.50	1.7
4						3220	119					1.6
5		2007			40	2692	118				2.03	1.5
6	1					2237	120			0.5		1.6
8						1543	122			0.6		1.7
10	2					1138	125					1.7

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

English

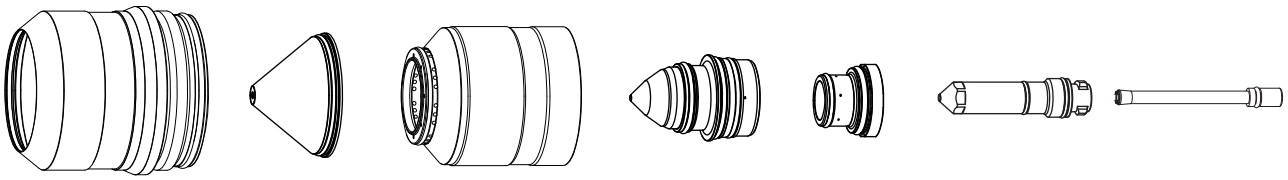
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/8	3	2006	30	80	45	140	120	0.200	0.200	0.3	0.100	0.07
3/16	3	2006				110	118				0.080	0.06
1/4	1	2007			40	84	120			0.5		0.06
5/16						64	122			0.6		0.07
3/8						48	124					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	2.54 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	2.54 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	0.58 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

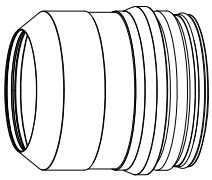
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	2010	10	80	30	3820	121	5.08	5.08	0.3	2.03	1.7
4						3216	122					1.7
5						2677	124					1.6
6	1					2203	126			0.5		1.6
7						1794	128					1.6
8						1450	129			0.6		1.7
10	2					956	133					1.8

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

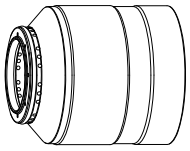
English

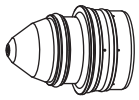
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/8	3	2010	10	80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

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

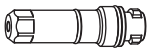

Shield retaining cap
420200

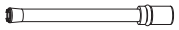

Shield
420318


Nozzle retaining cap
420365


Nozzle
420315


Swirl ring
420314


Electrode
420356


Water tube
420368

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

Metric

Material 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	154	6.07	6.07	0.4	2.54	2.5
7						2358	168					2.5
8						2078	169			0.5		2.5
10	1					1594	171					2.5
12						1354	174			0.6		2.5
15	2					1178	178			0.7	3.04	2.4
20						635	182			1.3		2.7

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

English

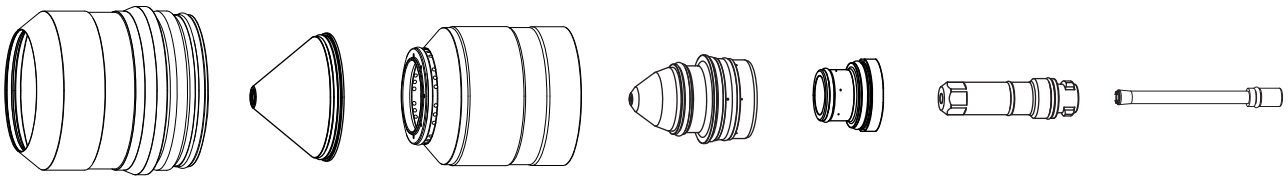
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	2051	52	90	52	100	168	0.240	0.240	0.5	0.100	0.10
5/16						83	169					0.10
3/8	1					65	170					0.10
1/2						50	175			0.6		0.10
5/8	2					45	179			0.7	0.120	0.09
3/4						30	181			1.2		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	15	20	2.54 mm	6350 mm/min	145 V	1.3 mm
English	N_2	N_2	8004	18	15	20	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	2.54 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	97	0.5 / 8*

* Gallons per hour (gph)

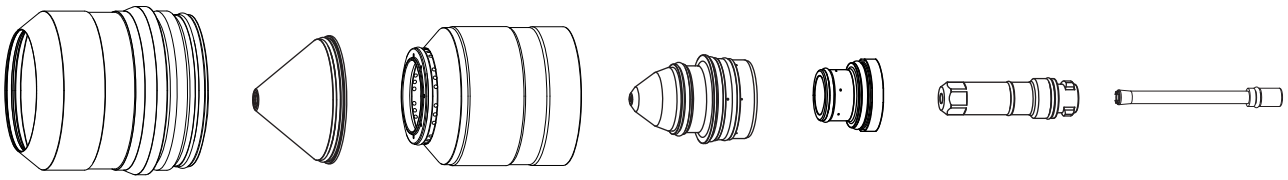
Metric

Material 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	voltage	mm	mm	seconds	mm	mm
6	3	2052	25	90	25	2413	154	6.10	6.10	0.4	2.54	2.5
8						2083	156			0.5		2.5
10	1					1702	158			0.6		2.5
12						1382	160			0.8		2.5
15	2					1178	164			1.0	3.05	2.8
20						762	170			1.3		3.2

English

Material 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	voltage	in	in	seconds	in	in
1/4	3	2052	25	90	25	95	154	0.240	0.240	0.4	0.100	0.10
5/16						83	156			0.5		0.10
3/8	1					70	157			0.6		0.10
1/2						50	161			0.8		0.10
5/8	2					45	165			1.0	0.120	0.11
3/4						35	168			1.2		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	150 / 320

Metric

Material 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	163	5.08	5.08	0.3	2.54	2.4
7								2205	164					2.4
8								1885	165			0.4		2.5
10	1	2053	53	6	10			1340	167			0.5		2.6
12							53	1100	169			0.6		2.5
15	2	2061	50	8	12	20	52	1016	172	6.10	6.10	0.7	3.05	2.6
20								813	175			1.5		2.9

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

English

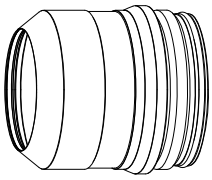
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in				H_2	Ar	N_2		in/min	volts	in	in	seconds	in	in
1/4	3	2060	52	4	12	24	52	95	163	0.200	0.200	0.3	0.100	0.09
5/16								75	165			0.4		0.10
3/8	1	2053	53	6	10		53	55	166			0.5		0.10
1/2								40	170			0.6		0.10
5/8	2	2061	50	8	12	20	52	40	173	0.240	0.240	0.8	0.120	0.10
3/4								35	174			1.5		0.10

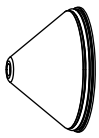
Marking

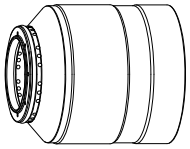
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8001	15	10	10	2.54 mm	6350 mm/min	118 V	1.3 mm
English	N_2	N_2	8001	15	10	10	0.100 in	250 in/min	118 V	0.05 in

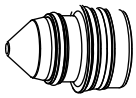
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9014	24	65	15	2.54 mm	2540 mm/min	88 V	2.0 mm
English	Ar	N_2	9014	24	65	15	0.100 in	100 in/min	88 V	0.08 in

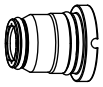
Aluminum – 170 A – Air Plasma / Air Shield – above water (Core, VWI, OptiMix)

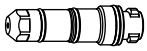

Shield retaining cap
420200


Shield
420513


Nozzle retaining cap
420365


Nozzle
420524


Swirl ring
420260


Electrode
420258


Water tube
420368

Flow rate (lpm/scfh)		
	N_2	Air
Pre flow	25 / 52	78 / 166
Pierce flow	–	120 / 255
Cut flow	–	120 / 255

Metric

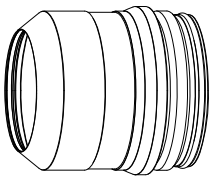
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2101	40	78	77	4826	136	5.59	5.59	0.3	2.79	3.0
7						4566	136					2.9
8						4166	136			0.4		2.9
10						3385	136					2.8
12	1					2665	138	5.58	5.88	0.6		2.7
15	1					1769	145	7.62	7.62	0.7	3.81	2.5
20	2					1086	151			1.0		2.9
25						786	155			1.2		3.0
30	4					486	162	Edge start		0.3	4.57	3.1
32						376	165					3.1
38						256	172					3.4

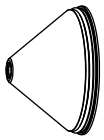
Aluminum – 170 A – Air Plasma / Air Shield – above water (Core, VWI, OptiMix) (continued)

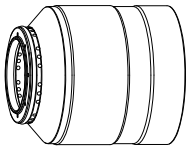
English

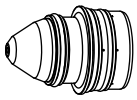
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	2101	40	78	77	190	136	0.220	0.220	0.3	0.110	0.12
5/16						165	136			0.4		0.11
3/8						140	136					0.11
1/2	1					95	139			0.6		0.10
5/8						60	147	0.300	0.300	0.8	0.150	0.10
3/4	2					45	150			1.0		0.11
1						30	155			1.2		0.12
1-1/4	4					15	165	Edge start		0.3	0.180	0.12
1-1/2						10	172					0.14

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

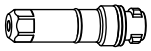

Shield retaining cap
420200

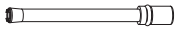

Shield
420327


Nozzle retaining cap
420365


Nozzle
420324


Swirl ring
420314


Electrode
420356


Water tube
420368

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

Metric

Material 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	204	6.10	6.10	0.30	2.54	2.4
7						5735	195			0.32		2.4
8	1					5375	180			0.35		2.3
10						4560	159			0.45		2.2
15	2					2220	166			0.92	3.05	2.3
20						1156	178			1.58	3.81	2.6
25	4					556	187	Edge start		1.97		2.8

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

English

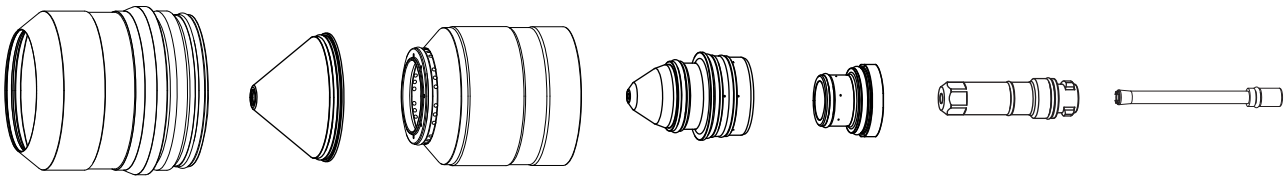
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	2057	54	90	54	235	204	0.240	0.240	0.3	0.100	0.10
3/8						190	158			0.4		0.10
1/2	1					120	163			0.7		0.09
5/8						75	167			1.0	0.120	0.09
3/4	2					50	176			1.5	0.150	0.10
1	4					20	188	Edge start		2.0		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	2.54 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	2.54 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	47 / 100	0.5 / 8*

* Gallons per hour (gph)

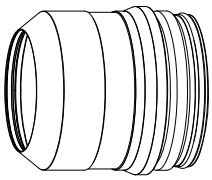
Metric

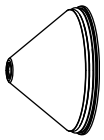
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2058	30	90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

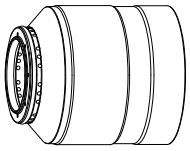
English

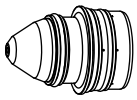
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
3/8	3	2058	30	90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

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

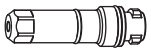

Shield retaining cap
420200

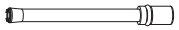

Shield
420327


Nozzle retaining cap
420365


Nozzle
420324


Swirl ring
420323


Electrode
420356


Water tube
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	162 / 345

Metric

Material 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							2934	179			0.6		2.5
15								2150	179			0.7		2.5
20	2	2062			10	24		1213	192	7.62	7.62	1.1		2.9
25		2063		8	6	26		913	196		15.24	1.9	3.05	3.2
30	4	2064			12	20		650	198	Edge start		0.5	4.57	3.2
32								552	199					3.3
38								384	202					3.3

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

English

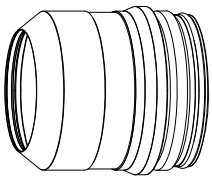
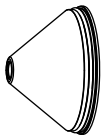
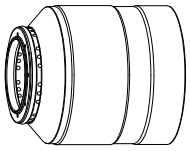
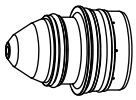
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce pressure	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in				H_2	Ar	N_2		in/min	volts	in	in	seconds	in	in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

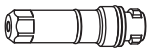
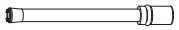
Marking

	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	2.54 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	2.54 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, 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	181 / 385

Metric

Material 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						4542	170					3.4
15						3582	172			0.5		3.4
20	1					2064	181			0.9	5.08	3.7
25						1564	185		12.70	1.5		3.8
30	4					1248	191	Edge start		0.5	6.35	4.2
38		2100			58	643	201			0.6		4.8
40						559	205					4.8
44						399	212			0.8		4.8
50	5					270	218			1.0		5.0

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

English

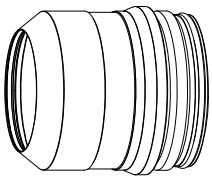
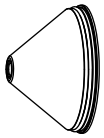
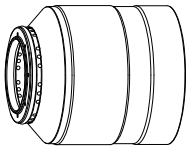
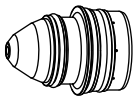
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
3/8	3	2054	54	90	54	210	168	0.300	0.300	0.4	0.150	0.14
1/2						170	171					0.13
5/8						130	172			0.5		0.13
3/4	1					85	180			0.8	0.250	0.15
1						60	185		0.500	1.5		0.15
1-1/4	4					45	193	Edge start		0.5		0.17
1-1/2		2100			58	25	201					0.19
1-3/4						15	213			0.8		0.190
2	5					10	219			1.0		0.192

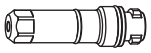
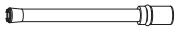
Marking

	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	2.54 mm	6350 mm/min	121 V	0.7 mm
English	N_2	N_2	8005	18	20	15	0.100 in	250 in/min	121 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	9015	24	55	15	2.54 mm	3810 mm/min	97 V	1.4 mm
English	Ar	N_2	9015	24	55	15	0.100 in	150 in/min	97 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	75 / 160	0.5 / 8*

* Gallons per hour (gph)

Metric

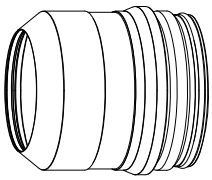
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
12	3	2055	22	90	22	2286	179	7.62	7.62	0.5	3.81	3.8
15						2010	180			0.7		4.0
20	1					1702	184		8.89	1.2	5.08	4.0
25						1302	188		15.24	1.9		4.2
30	2					1086	192		17.78	3.1		4.4
32						1006	194			3.6		4.5
38	4					766	200	Edge start		0.4	6.35	4.7
40						724	200					4.8
44						644	200					5.0
50						524	200			1.0		5.0

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

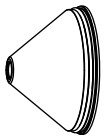
English

Material 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	3	2055	22	90	22	90	179	0.300	0.300	0.5	0.150	0.15
5/8						75	180			0.8		0.15
3/4	1					70	183			1.0	0.200	0.16
1						50	188		0.600	2.0		0.16
1-1/2	4					30	200	Edge start		0.4	0.250	0.19
2						20	200			1.0		0.21

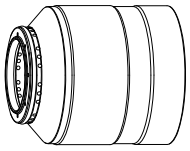
Aluminum – 300 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



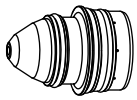
Shield retaining cap
420200



Shield
420362

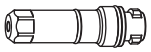


Nozzle retaining cap
420365

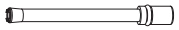


Nozzle
420359

Swirl ring
420358



Electrode
420356



Water tube
420368

Flow rate (lpm/scfh)			
	H_2	Ar	N_2
Pre flow	–	–	118 / 250
Pierce flow	24 / 51	48 / 102	150 / 320
Cut flow	24 / 51	48 / 102	150 / 320

Metric

Material 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								3442	175			0.6		4.0
20	1	2056		24	21	15		2356	182			0.9		4.2
25								2056	188			1.2		4.2
30	2							1480	192		12.70	1.9		4.6
32								1245	194			2.3		4.7
38		2065		18	24	18		645	202		15.24	4.0	6.35	5.4
40	4							582	197	Edge start		0.5		5.5
44		2066		12	48	0		470	185					5.8
50								391	187					6.0

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

English

Material 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	3	2065	54	18	24	18	54	150	171	0.350	0.350	0.4	0.200	0.16
5/8								130	176			0.6		0.16
3/4	1	2056		24	21	15		95	181			0.8		0.17
1								80	188			1.2		0.17
1-1/4	2							50	194		0.500	2.2		0.19
1-1/2		2065		18	24	18		25	202		0.600	4.0		0.21
1-3/4	4	2066		12	48	0		18	184	Edge start		0.5	0.250	0.23
2								15	187					0.24

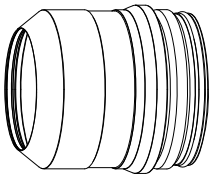
Marking

	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	2.54 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

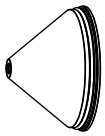
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9017	28	35	15	2.54 mm	2540 mm/min	77 V	1.4 mm
English	Ar	N_2	9017	28	35	15	0.100 in	100 in/min	77 V	0.06 in

Cut charts for ferrous (mild steel) processes – underwater

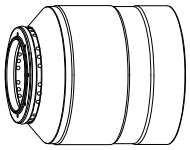
Mild steel – 80 A – O_2 Plasma / Air Shield (Core, VWI, OptiMix)



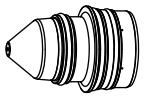
Shield retaining cap
420200



Shield
420246

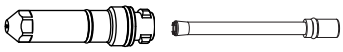


Nozzle retaining cap
420365



Nozzle
420243

Swirl ring
420242



Electrode
420240

Water tube
420368

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

Metric

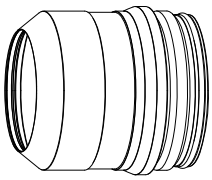
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm							volts	mm	mm	seconds	mm	mm
3	3	1001	18	82	72	5023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

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

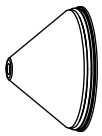
English

Material 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							volts	in	in	seconds	in	in
0.105 (12GA)	3	1001	18	82	72	203	118	0.160	0.160	0.1	0.080	0.07
0.135 (10GA)						162	118			0.2		0.07
3/16		1002			68	140	119					0.07
1/4	1	1003			56	88	125			0.3		0.08
5/16		1004			52	77	121			0.4		0.08
3/8		1005			46	60	123			0.5		0.08
1/2	2					50	126	0.200	0.200	0.7		0.09

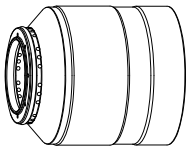
Mild steel – 130 A – O_2 Plasma / Air Shield – underwater (Core, VWI, OptiMix)



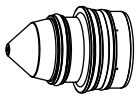
Shield retaining cap
420200



Shield
420255

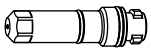


Nozzle retaining cap
420365



Nozzle
420252

Swirl ring
420242



Electrode
420249

Water tube
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

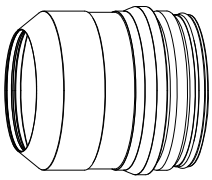
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
3	3	1101	37	92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

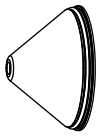
Mild steel – 130 A – O_2 Plasma / Air Shield – underwater (Core, VWI, OptiMix) (continued)

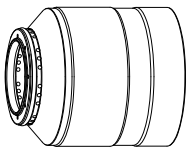
English

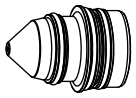
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.135 (10GA)	3	1101	37	92	45	216	132	0.200	0.200	0.1	0.110	0.09
3/16						171	134	0.220	0.220	0.2		0.09
1/4	1	1102			27	120	138			00.3		0.09
5/16		1103			82	117	134	0.240	0.240			0.09
3/8		1104			77	88	138					0.10
1/2		1105			72	64	142	0.260	0.260	0.5		0.11
5/8	2					54	147	0.300	0.300	0.7	0.150	0.11
3/4						41	151			1.0		0.12
1						18	159			1.8	0.160	0.15

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

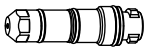

Shield retaining cap
420200

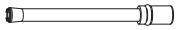

Shield
420513


Nozzle retaining cap
420365


Nozzle
420261


Swirl ring
420260


Electrode
420258


Water tube
420368

Flow rate (lpm/scfh)			
	N_2	O_2	Air
Pre flow	23 / 49	–	78 / 165
Pierce flow	–	33 / 69	96 / 202
Cut flow	–	33 / 69	50 / 105

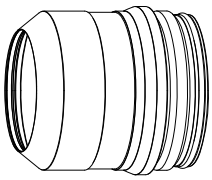
Metric

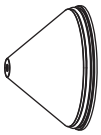
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	1151	45	78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

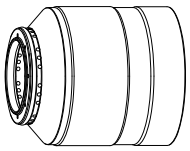
English

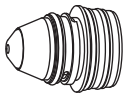
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	1151	45	78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

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

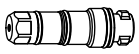

Shield retaining cap
420200


Shield
420491


Nozzle retaining cap
420365


Nozzle
420279


Swirl ring
420406


Electrode
420276


Water tube
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

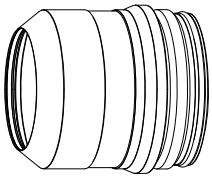
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
15	3	1206	35	90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

English

Material 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	3	1206	35	90	26	140	145	0.250	0.250	0.4	0.150	0.15
5/8	1					115	148			0.5	0.130	0.15
3/4						95	148			0.7		0.16
1						65	154		0.300	1.0		0.18
1-1/4	2					50	159			1.8	0.180	0.19
1-1/2						35	163			3.0		0.20

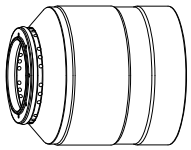
Cut charts for non-ferrous (stainless steel) processes – underwater

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

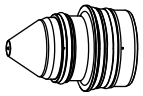


Shield retaining cap
420200

Shield
420309

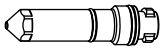


Nozzle retaining cap
420365



Nozzle
420306

Swirl ring
420323



Electrode
420303

Water tube
420368

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

Metric

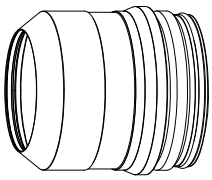
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
mm				Plasma gas	Shield gas	mm/min	volts	mm	mm	seconds	mm	mm
3	3	2006	30	80	45	3400	119	5.08	5.08	0.3	2.50	1.6
4						2861	119					1.5
5		2007			40	2388	120				2.03	1.5
6	1					1983	118			0.5		1.6
7						1644	120					1.6
8						1371	124			0.6		1.6
10	2	2007	30	80	40	1027	128				2.03	1.8

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

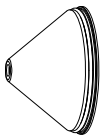
English

Material 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
0.135 (10GA)	3	2006	30	80	45	124	119	0.200	0.200	0.3	0.080	0.06
3/16						99	120					0.06
1/4	1	2007			40	73	118			0.5		0.06
5/16						54	124			0.6		0.07
3/8						43	127					0.07

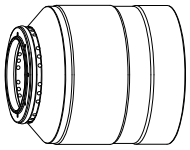
Stainless steel – 80 A – N_2 Plasma / H_2O Shield – underwater (VWI, OptiMix)



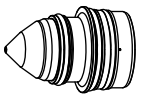
Shield retaining cap
420200



Shield
420300

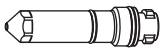


Nozzle retaining cap
420365

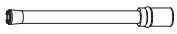


Nozzle
420290

Swirl ring
420323



Electrode
420303



Water tube
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)

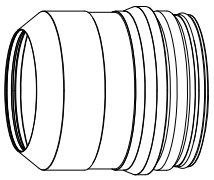
Metric

Material 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	3404	120	5.08	5.08	0.3	2.03	1.6
4						2866	124					1.5
5						2387	126			0.5		1.5
6	1					1969	129			0.6		1.6
7						1609	130					1.8
8						1310	132					2.0
10	2					889	135			0.8		2.0
12		2011		86		706	137					1.8

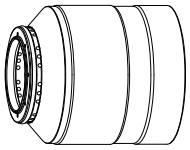
English

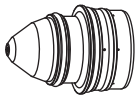
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
0.135 (10GA)	3	2010	10	80	30	124	122	0.200	0.200	0.3	0.080	0.06
3/16						99	124					0.06
1/4	1					72	131			0.5		0.07
5/16						54	133			0.6		0.08
3/8						36	134					0.08
1/2	2	2011		86		28	137			0.8		0.07

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

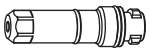

Shield retaining cap
420200

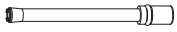

Shield
420318


Nozzle retaining cap
420365


Nozzle
420315


Swirl ring
420314


Electrode
420356


Water tube
420368

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

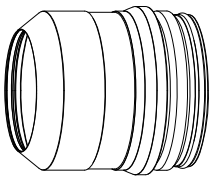
Metric

Material 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						2052	161					2.2
8						1834	163			0.5		2.3
10	1					1466	166					2.3
12						1321	167			0.6		2.3
15	2					935	168			0.7	3.05	2.4
20						533	180			1.3		2.8

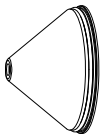
English

Material 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	3	2051	52	90	52	86	160	0.240	0.240	0.4	0.100	0.09
5/16						73	163			0.5		0.09
3/8	1					59	166					0.09
1/2						50	167			0.6		0.09
5/8	2					32	169			0.7	0.120	0.09
3/4						23	175			1.2		0.10

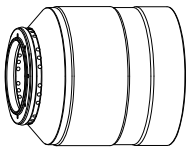
Stainless steel – 130 A – N_2 Plasma / H_2O Shield – underwater (VWI and OptiMix)



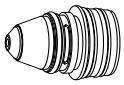
Shield retaining cap
420200



Shield
420469

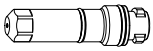


Nozzle retaining cap
420365



Nozzle
420315

Swirl ring
420314



Electrode
420356

Water tube
420368

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

* Gallons per hour (gph)

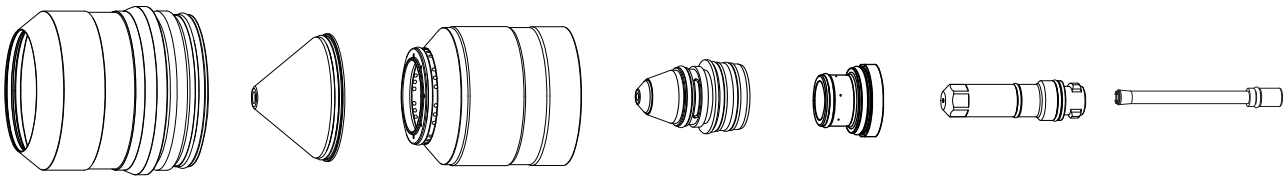
Metric

Material 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						2057	168			0.3		2.3
8						1846	172			0.4		2.5
10	1					1486	178			0.5		2.7
12						1326	177			0.6		2.6
15	2					852	181	6.35	6.35	0.8	3.05	3.0
20						406	184			1.3		3.6

English

Material 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	3	2052	25	90	25	86	166	0.200	0.200	0.2	0.100	0.09
5/16						73	172			0.4		0.10
3/8	1					60	178			0.5		0.11
1/2						50	177			0.6		0.10
5/8	2					27	183	0.250	0.250	0.8	0.120	0.13
3/4						18	183			1.3		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	47 / 100	0.5 / 8*

* Gallons per hour (gph)

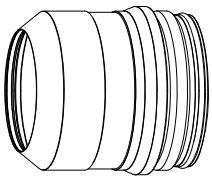
Metric

Material 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
10	3	2058	30	90	30	1799	175	5.08	5.08	0.4	2.54	2.8
12	1					1595	177			0.5		2.9
15						1256	178					3.0
20	2					869	185	7.62	7.62	1.3		3.4
25						582	191		15.24	3.0	3.05	3.9

English

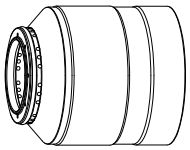
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
in				Plasma gas	Shield gas	in/min	volts	in	in	seconds	in	in
3/8	3	2058	30	90	30	73	175	0.200	0.200	0.4	0.100	0.11
1/2	1					60	178			0.5		0.11
5/8						45	178					0.12
3/4	2					36	184	0.300	0.300	1.0		0.13
1						22	192		0.600	3.0	0.120	0.15

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

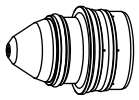


Shield retaining cap
420200

Shield
420327

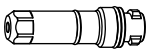


Nozzle retaining cap
420365

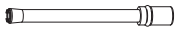


Nozzle
420324

Swirl ring
420314



Electrode
420356



Water tube
420368

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

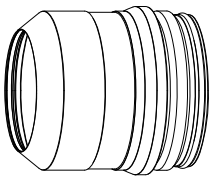
Metric

Material 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					1667	164			0.4		2.5
15						1115	169			0.6		2.8
20	2					641	177			1.3	3.05	3.1
25						368	186			1.7	3.81	3.6

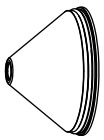
English

Material 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	3	2057	54	90	54	73	164	0.240	0.240	0.3	0.100	0.10
7/16						68	164			0.4		0.10
1/2	1					64	164					0.10
9/16						50	168			0.6		0.10
5/8						36	171			0.7		0.11
3/4	2					27	175			1.2	0.120	0.12
7/8						20	181			1.5	0.135	0.13
1						14	187			1.7	0.150	0.14

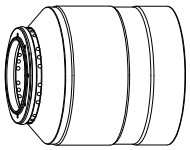
Stainless steel – 300 A – N_2 Plasma / N_2 Shield – underwater (Core, VWI, OptiMix)



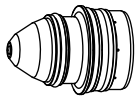
Shield retaining cap
420200



Shield
420362

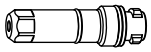


Nozzle retaining cap
420365

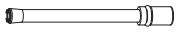


Nozzle
420359

Swirl ring
420323



Electrode
420356



Water tube
420368

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

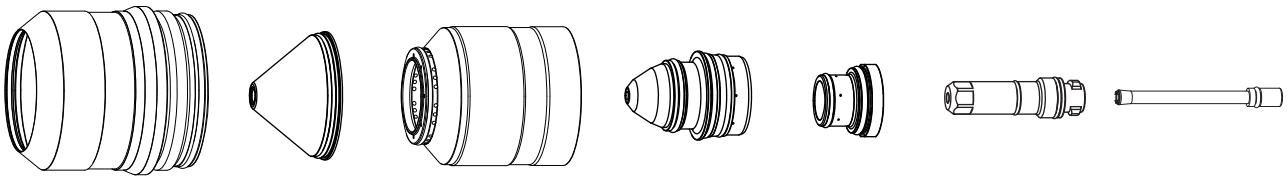
Metric

Material 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						2424	174			0.5		3.2
20	1					1663	179			0.9	5.08	3.4
25						1299	182		12.70	1.5		3.5
30	2					986	185		15.24	2.0		3.6
32						889	186			2.2		3.6

English

Material 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	3	2054	54	90	54	107	172	0.300	0.300	0.4	0.170	0.12
5/8						91	175			0.5		0.13
3/4	1					68	178			0.8	0.200	0.14
1						50	182		0.500	1.5		0.14
1-1/4	2					35	186		0.600	2.2		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	75 / 160	0.5 / 8*

* Gallons per hour (gph)

Metric

Material 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						1795	182			0.9		3.5
20	1					1547	188			1.0	5.08	3.7
25						1184	191			1.2		3.9
30	2					904	193		15.24	1.9		4.0
32						813	194			2.0		4.7

English

Material 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	3	2055	22	90	22	77	181	0.300	0.300	0.5	0.150	0.14
5/8						68	182			1.0		0.14
3/4	1					64	188				0.200	0.15
1						45	191			1.2		0.15
1-1/4	2					32	194		0.600	2.0		0.16

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 3*.

Refer to *Table 3* to see the bevel geometry that you can expect with XPR torches during ferrous (mild steel) and non-ferrous (stainless steel/aluminum) consumables.

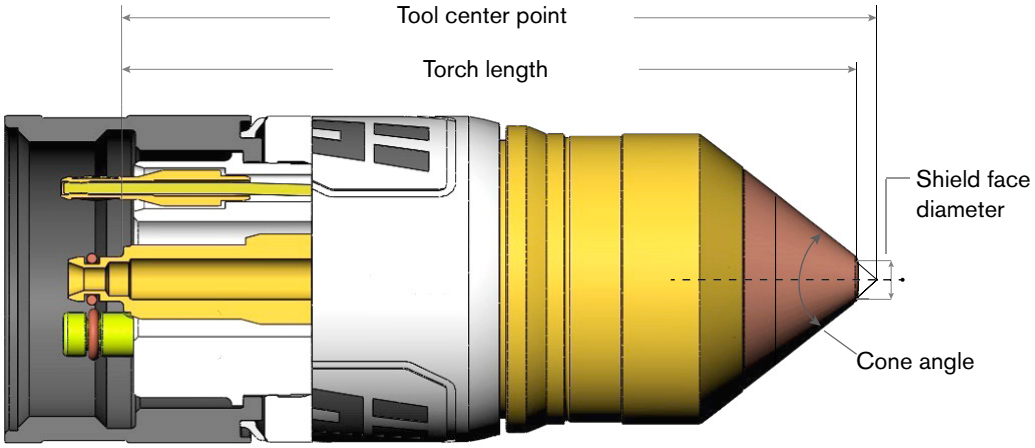


Table 3 – Bevel geometries for sample ferrous and non-ferrous processes

Bevel geometry* for ferrous (mild steel) processes				
Mild steel process	**Cone angle**	**Shield face diameter**	**Torch length**	**Tool center point**
300 A mild steel	76°	8.64 mm (0.340 in.)	128.27 mm (5.050 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.)
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.)
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**
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.