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

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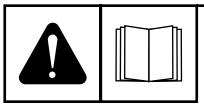


ENGLISH

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.

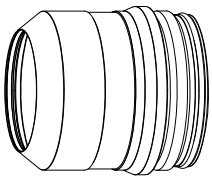
Manual selection of process settings is not necessary in most cases. However, you can adjust some pre-programmed settings with override or offset commands, within limits. For information about how to do this, refer to the instruction manual that came with your XPR cutting system.

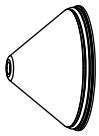
How to use process IDs to access optimal settings

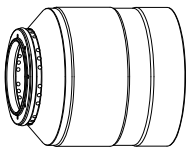
When you select a process ID from the CNC or XPR web interface, you automatically get the optimized settings that Hypertherm recommends for that process.

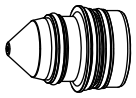
The pre-programmed settings come from Hypertherm's extensive laboratory tests. Because of differences in cutting systems, materials, and consumables, it is sometimes necessary to adjust the settings. However, in most cases, you can expect the best results when you use the default settings that come with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

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

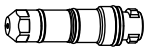

Shield retaining cap
420200

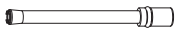

Shield
420513


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

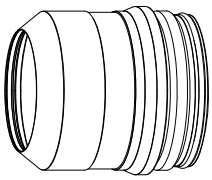
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	1151	45	78	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

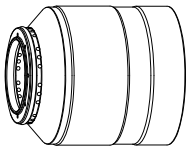
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark width
					Plasma gas	Shield gas				
Metric	Ar	Air	9008	18	15	15	2.54 mm	2540 mm/min	79 V	2.0 mm
English	Ar	Air	9008	18	15	15	0.100 in	100 in/min	79 V	0.08 in

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

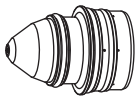


Shield retaining cap
420200

Shield
420327

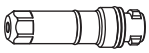


Nozzle retaining cap
420365

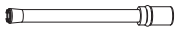


Nozzle
420324

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

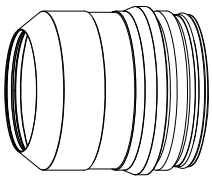
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
3/8	3	2057	54	90	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

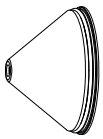
Marking

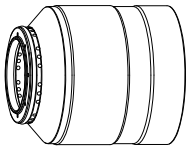
	Plasma gas	Shield gas	Process ID	Mark Current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.54 mm	6350 mm/min	121 V	2.0 mm
English	N_2	N_2	8005	18	20	15	0.100 in	250 in/min	121 V	0.08 in

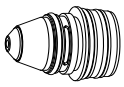
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9005	18	55	15	2.54 mm	3810 mm/min	96 V	2.0 mm
English	Ar	N_2	9005	18	55	15	0.100 in	150 in/min	96 V	0.08 in

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

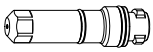

Shield retaining cap
420200

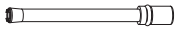

Shield
420472


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)

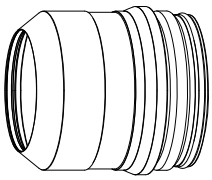
Metric

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

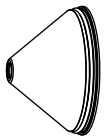
English

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

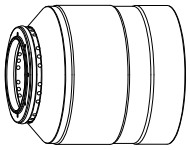
Stainless steel – 170 A – Mixed-fuel gas Plasma / N_2 Shield – above water (OptiMix)



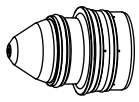
Shield retaining cap
420200



Shield
420327

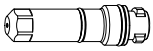


Nozzle retaining cap
420365

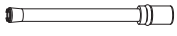


Nozzle
420324

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

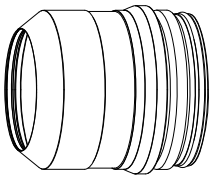
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in				H_2	Ar	N_2		in/min	volts	in	in	seconds	in	in
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

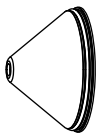
Marking

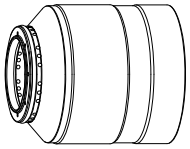
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.54 mm	6350 mm/min	121 V	0.08 mm
English	N_2	N_2	8005	18	20	15	0.098 in	250 in/min	121 V	2.0 in

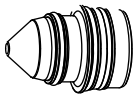
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9005	18	55	15	2.54 mm	3810 mm/min	96 V	0.07 mm
English	Ar	N_2	9005	18	55	15	0.098 in	150 in/min	96 V	1.8 in

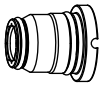
Aluminum – 170 A – Air Plasma / Air Shield – above water (Core, VWI, OptiMix)

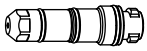

Shield retaining cap
420200


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

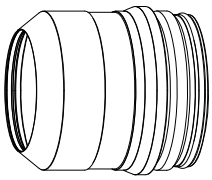
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
6	3	2101	40	78	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

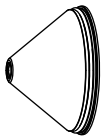
Aluminum – 170 A – Air Plasma / Air Shield – above water (Core, VWI, OptiMix) (continued)

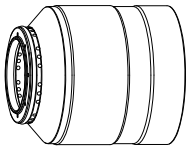
English

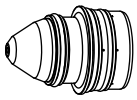
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	2101	40	78	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)

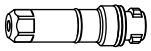

Shield retaining cap
420200

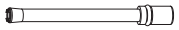

Shield
420327


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

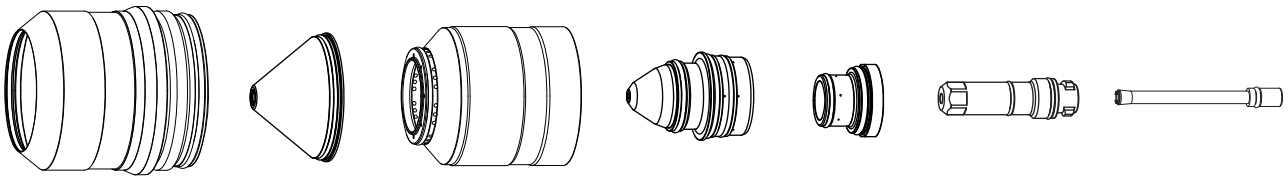
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
1/4	3	2057	54	90	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)

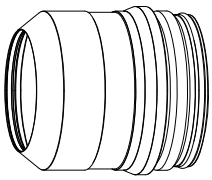
Metric

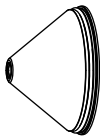
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
mm						mm/min	volts	mm	mm	seconds	mm	mm
10	3	2058	30	90	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

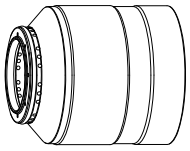
English

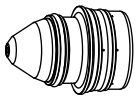
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas	Shield gas							
in						in/min	volts	in	in	seconds	in	in
3/8	3	2058	30	90	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)

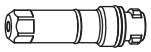

Shield retaining cap
420200

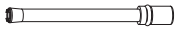

Shield
420327


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

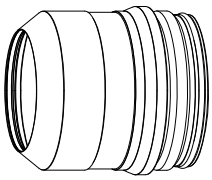
Material thickness	Cut category	SYSTEM SETTINGS						CNC SETTINGS						
		XPR process ID	Shield pierce pressure	Cutflow				Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
				Plasma gas			Shield gas							
in				H_2	Ar	N_2		in/min	volts	in	in	seconds	in	in
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

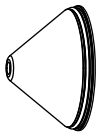
Marking

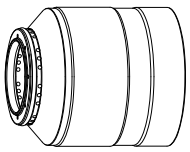
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	N_2	N_2	8005	18	20	15	2.54 mm	6350 mm/min	121 V	1.8 mm
English	N_2	N_2	8005	18	20	15	0.100 in	250 in/min	121 V	0.07 in

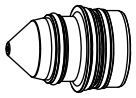
	Plasma gas	Shield gas	Process ID	Mark current	Cutflow		Marking height	Marking speed	Arc voltage	Mark widths
					Plasma gas	Shield gas				
Metric	Ar	N_2	9015	24	55	15	2.54 mm	3810 mm/min	97 V	1.7 mm
English	Ar	N_2	9015	24	55	15	0.100 in	150 in/min	97 V	0.07 in

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

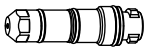

Shield retaining cap
420200

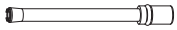

Shield
420513


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

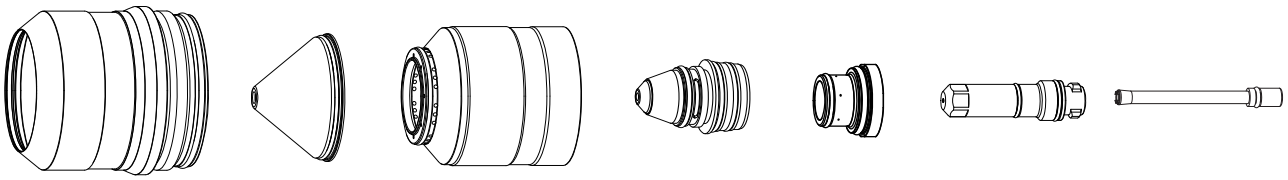
Metric

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

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)

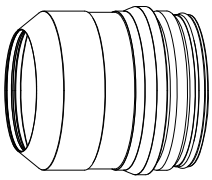
Metric

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

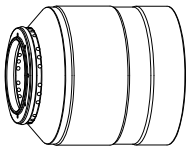
Material thickness	Cut category	SYSTEM SETTINGS				CNC SETTINGS						
		XPR process ID	Shield pierce setting	Cutflow		Cut speed	Arc voltage	Transfer height	Pierce height	Pierce delay	Cut height	Kerf compensation
in				Plasma gas	Shield gas	in/min	volts	in	in	seconds	in	in
3/8	3	2058	30	90	30	73	175	0.200	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)

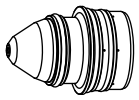


Shield retaining cap
420200

Shield
420327

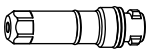


Nozzle retaining cap
420365

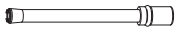


Nozzle
420324

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

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.

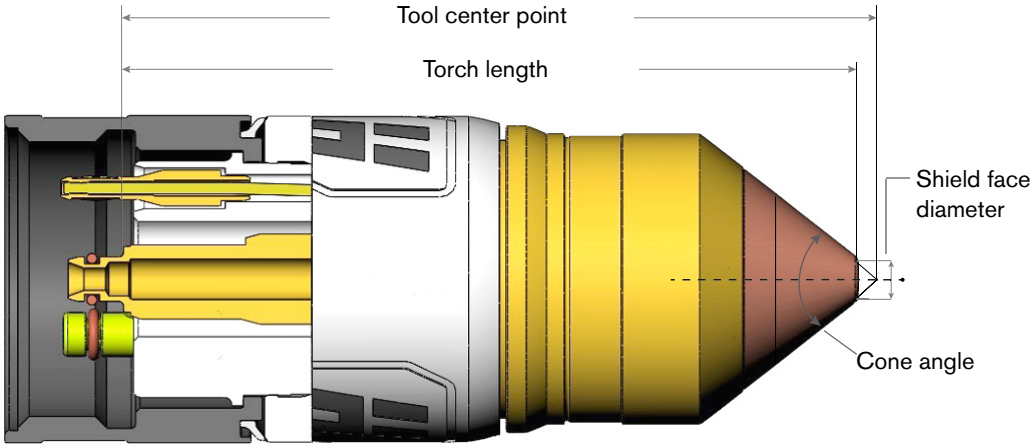


Table 3 – Bevel geometries for sample ferrous and non-ferrous processes

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.