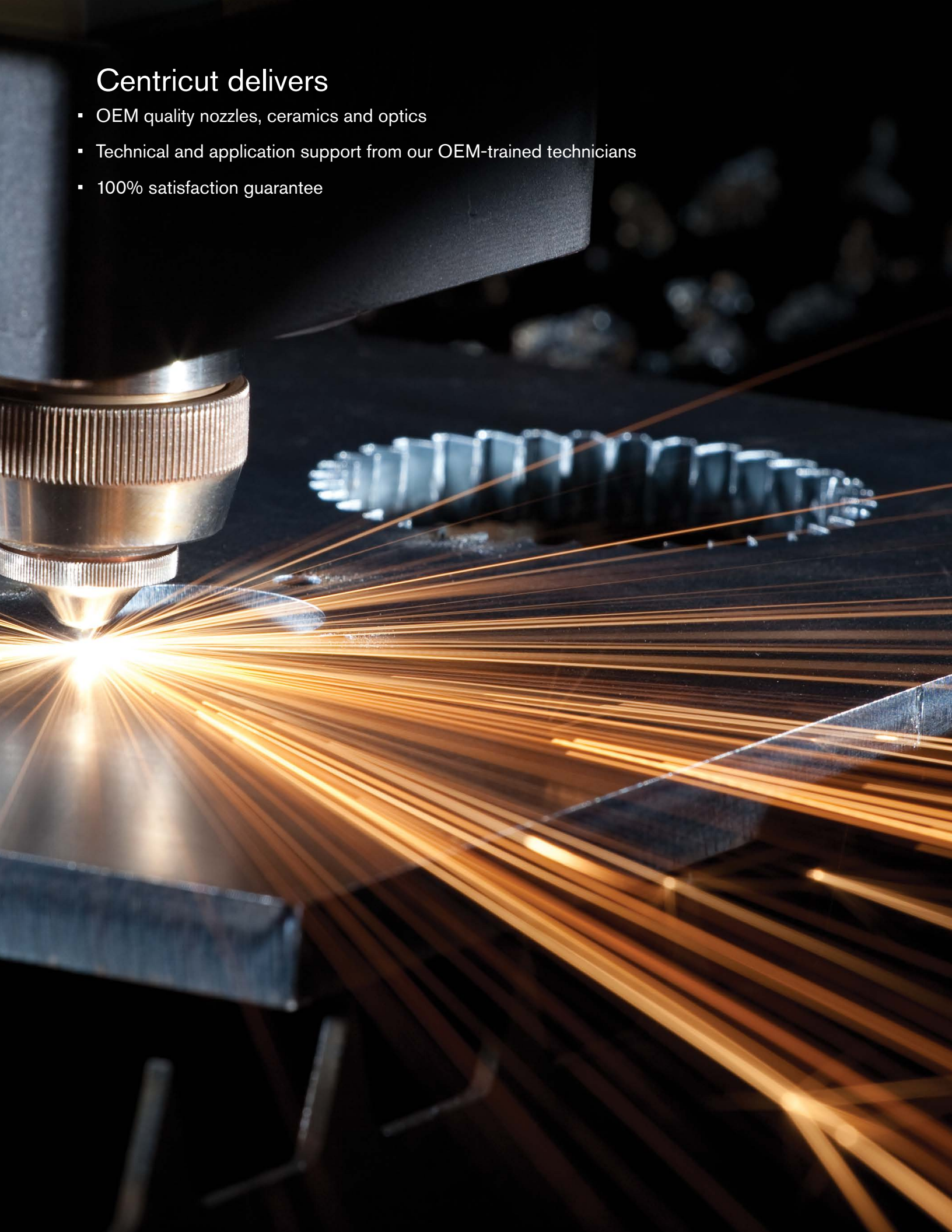
Centricut®

2018 catalog

For CO_2 and fiber laser consumables

Replacement parts suitable for HK Laser & Systems®



Centricut delivers

- OEM quality nozzles, ceramics and optics
- Technical and application support from our OEM-trained technicians
- 100% satisfaction guarantee

CO_2 and fiber laser nozzles

Nozzle options

All Centricut nozzles are engineered and manufactured to the highest standards. Select the OEM quality nozzle best suited for your application needs

Copper

Most commonly used nozzle offering good durability and nozzle life. Primary nozzle type for fiber lasers.

Chrome plated

Shiny, mirror-like finish provides increased spatter resistance, improved durability and longer life than copper nozzles. Not recommended for use on fiber lasers.

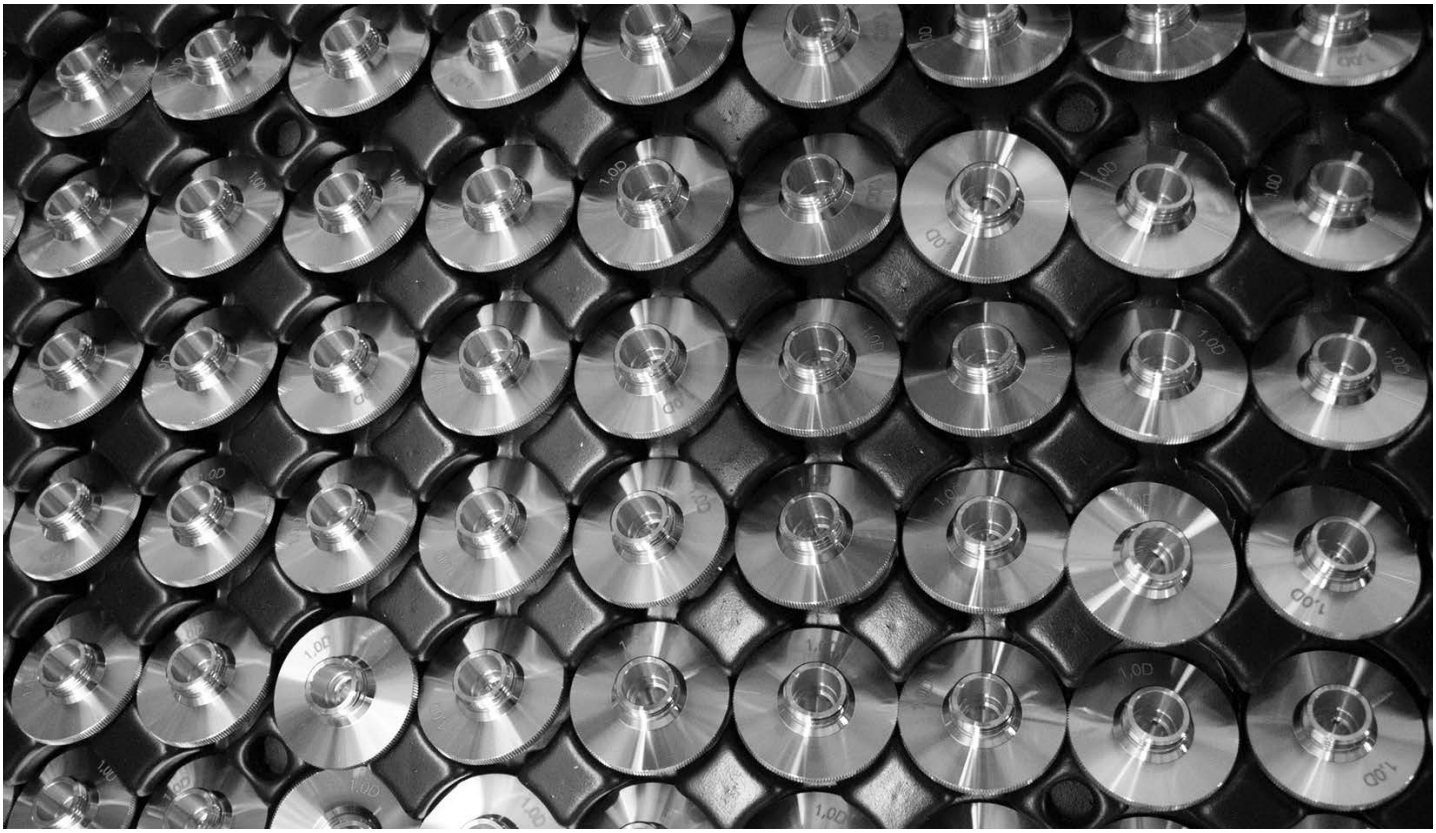
Look for CP in the part number to identify a chrome plated nozzle

Hard chrome plated

Premium nozzles offering the highest level of durability and longest nozzle life. These nozzles are not as shiny as chrome plated and have a dull appearance. Not recommended for use on fiber lasers.

Look for HCP in the part number to identify a hard chrome nozzle.

CP (chrome plated)	Nozzles plated with chrome for increased durability. These nozzles are easier to clean, resist damage due to 'tip-ups' and have better spatter resistance over non-plated nozzles. For use in all laser cutting applications.
Conical	Conical internal geometry for high pressure, non-ferrous cutting applications using nitrogen, air or argon.
Cylindrical	Cylindrical internal geometry for low pressure, mild steel cutting applications using oxygen.
Double	Insert pressed into a standard cylindrical nozzle for improved edge quality, laminar gas flow and spatter resistance. Primarily used in mild steel applications.
HCP (hard chrome plated)	Enhanced durability chrome plated nozzles. These nozzles are easier to clean, resist damage due to 'tip-ups' and have better spatter resistance over non-plated nozzles. For use in all laser cutting applications.
HP (high pressure) HD (high density)	Conical style nozzle for high pressure, non-ferrous cutting applications using nitrogen, air or argon.
Inner	Also referred to as a 'nozzle insert'. Works in conjunction with an outer nozzle to create a double nozzle. Primarily used in mild steel applications.
Low pressure	Cylindrical style nozzle for low pressure, mild steel cutting applications using oxygen.
Outer	Works in conjunction with an inner nozzle to create a double nozzle. Primarily used in mild steel applications.
Shower	Nozzles with a center orifice surrounded by smaller jets. The smaller jets focus the assist gas into the kerf, creating improved edge quality and the ability to cut thicker material. Primarily used in mild steel applications.



CO_2 and fiber laser optics

Optics key

Lens	
MEN	Meniscus
PLX	Plano-convex
MTD	Mounted
Not MTD	Not mounted
PO	Plano
MP5 or ULA	Ultra low absorption
AR	Anti-reflection
ZNSE	Sinc-selinide
FS	Fused silica
DIA	Diameter
FL	Focal length
ET	Edge thickness
WD	Working distance

How to handle optics

Follow these easy steps, when cleaning or changing your optic, to help maximize the life and performance of your lens

- Avoid touching coated surfaces of the lens and hold the optic by its sides
- Wear powder-free finger cots or latex gloves when handling
- Do not use any tools or sharp objects when handling the optic or when removing it from its packaging
- Ensure the work surface is clean and free of oils, grease and dirt
- Do not place the optic on hard surfaces as they scratch easily
- Once the optic has been unpacked, carefully place it on the lens tissue in which it was originally wrapped

Optics disposal

It is important to dispose of used laser optics at a licensed industrial waste facility which is in compliance with all local, state, and federal regulations. If you don't have access to a licensed industrial waste facility, and purchased your laser optics through Centricut, you may return them to Centricut for proper disposal. This service is only available to Centricut customers.

All optics returned to Centricut must:

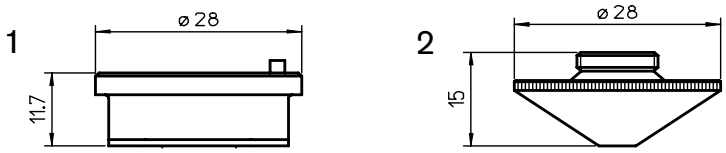
- Include return authorization and invoice numbers
- Be sealed in a plastic bag to minimize any hazards
- Remove excess ZnSe powder prior to sealing

*Acceptance of goods will be refused if not packaged correctly or if the return authorization number isn't included

Centricut®

Replacement parts suitable for:

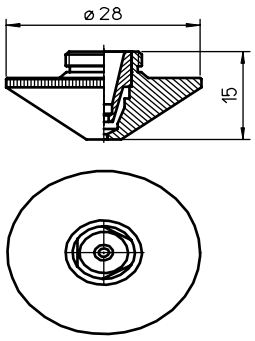
HK Laser & Systems®



Consumables

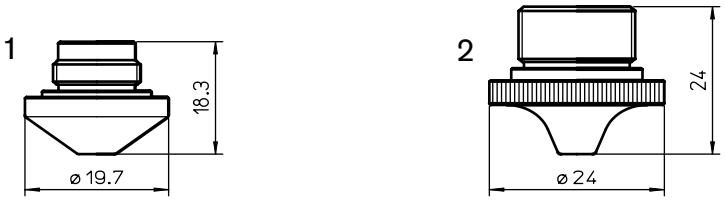
	Centricut part number	Esse A part number	Reference number	Description	Pkg qty
1	HW405-0811	AL408	MX-0875, HPH-S01007-7	HW-Nozzle holder, ceramic	1
2	PT345-0008	L935		PT-Nozzle HD, 0.8 mm	1
	PT345-1548	L234	281548, P0591-571-00010, MX-0860	PT-Nozzle HD, 1.0 mm	1
	PT345-1549	L235	281549, P0591-572-00012, MX-0861	PT-Nozzle HD, 1.2 mm	1
	PT345-1463	L236	281463, P0591-573-00015, MX-0862	PT-Nozzle HD, 1.5 mm	1
	PT345-0001	L237	P0591-574-00018, MX-0863	PT-Nozzle HD, 1.8 mm	1
	PT345-1550	L238	281550, P0591-575-00020, MX-0864	PT-Nozzle HD, 2.0 mm	1
	PT345-0003	L239	P0591-574-00023	PT-Nozzle HD, 2.3 mm	1
	PT345-1551	L240	281551, P0591-576-00025, MX-0865	PT-Nozzle HD, 2.5 mm	1
	PT345-1552	L936		PT-Nozzle HD, 2.75 mm	1
	PT345-0002	L241		PT-Nozzle HD, 3.0 mm	1
	PT345-0005	L826		PT-Nozzle HD, 3.2 mm	1
	PT345-0006	L827		PT-Nozzle HD, 3.5 mm	1
	PT345-0004	L828		PT-Nozzle HD, 4.0 mm	1
	PT345-0007	L829		PT-Nozzle HD, 4.5 mm	1
	PT345-1547CP	L935X		PT-Nozzle HD, 0.8 mm CP	1
	PT345-1548CP	L234X	281548, P0591-571-00010	PT-Nozzle HD, 1.0 mm CP	1
	PT345-1549CP	L235X	281549, P0591-572-00012	PT-Nozzle HD, 1.2 mm CP	1
	PT345-1463CP	L236X	281463, P0591-573-00015	PT-Nozzle HD, 1.5 mm CP	1
	PT345-0001CP	L237X	P0591-574-00018	PT-Nozzle HD, 1.8 mm CP	1
	PT345-1550CP	L238X	281550, P0591-575-00020	PT-Nozzle HD, 2.0 mm CP	1
	PT345-0003CP	L239X	281591	PT-Nozzle HD, 2.3 mm CP	1
	PT345-1551CP	L240X	281551, P0591-576-00025	PT-Nozzle HD, 2.5 mm CP	1
	PT345-0002CP	L241X		PT-Nozzle HD, 3.0 mm CP	1
	PT345-0006CP	L827X		PT-Nozzle HD, 3.5 mm CP	1
	PT345-0004CP	L828X		PT-Nozzle HD, 4.0 mm CP (10 pk)	1
	PT345-0007CP	L829X		PT-Nozzle HD, 4.5 mm CP	1

1



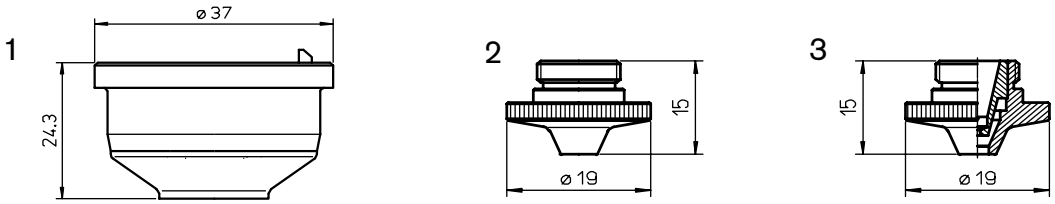
Consumables

	Centricut part number	Esse A part number	Reference number	Description	Pkg qty
1	PT358-0669	L669		PT-Nozzle double, 0.8 mm/inner 1.5 mm	1
	PT358-0010	L660		PT-Nozzle double, 1.0 mm/inner 1.5 mm	1
	PT358-0125	L661	P0591-002-00012	PT-Nozzle double, 1.2 mm/inner 1.5 mm	1
	PT358-0015	L662	P0591-002-00015	PT-Nozzle double, 1.5 mm/inner 1.5 mm	1
	PT358-0018	L663	P0591-002-00018	PT-Nozzle double, 1.8 mm/inner 1.5 mm	1
	PT358-0020	L664	P0591-002-00020	PT-Nozzle double, 2.0 mm/inner 1.5 mm	1
	PT358-0023	L665	P0591-002-00023	PT-Nozzle double, 2.3 mm/inner 1.5 mm	1
	PT358-0007	L666		PT-Nozzle double, 2.5 mm/inner 1.5 mm	1
	PT358-0030	L667		PT-Nozzle double, 3.0 mm/inner 1.5 mm	1
	PT358-0035	L668		PT-Nozzle double, 3.5 mm/inner 1.5 mm	1
	PT358-0008CP	L669X		PT-Nozzle double, 0.8 mm/inner 1.5 mm CP	1
	PT358-0010CP	L660X		PT-Nozzle double, 1.0 mm/inner 1.5 mm CP	1
	PT358-0125CP	L661X		PT-Nozzle double, 1.2 mm/inner 1.5 mm CP	1
	PT358-0015CP	L662X		PT-Nozzle double, 1.5 mm/inner 1.5 mm CP	1
	PT358-0018CP	L663X		PT-Nozzle double, 1.8 mm/inner 1.5 mm CP	1
	PT358-0020CP	L664X		PT-Nozzle double, 2.0 mm/inner 1.5 mm	1
	PT358-0023CP	L665X		PT-Nozzle double, 2.3 mm/inner 1.5 mm CP	1
	PT358-0025CP	L666X		PT-Nozzle double, 2.5 mm/inner 1.5 mm CP	1
	PT358-0030CP	L667X		PT-Nozzle double, 3.0 mm/inner 1.5 mm CP	1
	PT358-0035CP	L668X		PT-Nozzle double, 3.5 mm/inner 1.5 mm CP	1



Consumables

	Centricut part number	Esse A part number	Reference number	Description	Pkg qty
1	HW405-1010	L1070	NP10	HW-Nozzle, 1.0 mm	1
	HW405-1012	L1071	NP12	HW-Nozzle, 1.2 mm	1
	HW405-1015	L1072	NP15	HW-Nozzle, 1.5 mm	1
	HW405-1017	L1073	NP17	HW-Nozzle, 1.7 mm	1
	HW405-1020	L1074	NP20	HW-Nozzle, 2.0 mm	1
	HW405-1025	L1075	NP25	HW-Nozzle, 2.5 mm	1
	HW405-1030	L1076	NP30	HW-Nozzle, 3.0 mm	1
2	HW405-3010	L1490	NP10	HW-Nozzle NP, 1.0 mm	1
	HW405-3012	L1491	NP12	HW-Nozzle NP, 1.2 mm	1
	HW405-3015	L1492	NP15	HW-Nozzle NP, 1.5 mm	1
	HW405-3020	L1493	NP20	HW-Nozzle NP, 2.0 mm	1
	HW405-3025	L1494	NP25	HW-Nozzle NP, 2.5 mm	1



Consumables

	Centricut part number	Esse A part number	Reference number	Description	Pkg qty
1	HW405-1201	AL420	HCH-S01201	HW-Nozzle holder, ceramic	1
2	HW405-2008	L1482	NP08, MX-0988	HW-Nozzle N, 0.8 mm	1
	HW405-2010	L1483	NP10, MX-0989	HW-Nozzle N, 1.0 mm	1
	HW405-2012	L1484	NP12, MX-0990	HW-Nozzle N, 1.2 mm	1
	HW405-2015	L1485	NP15, MX-0991	HW-Nozzle N, 1.5 mm	1
	HW405-2018	L1487	NP18, MX-0993	HW-Nozzle N, 1.8 mm	1
	HW405-2020	L1486	NP20, MX-0992	HW-Nozzle N, 2.0 mm	1
	HW405-2025	L1488	NP25, MX-0994	HW-Nozzle N, 2.5 mm	1
	HW405-2030	L1489	NP30, MX-0995	HW-Nozzle N, 3.0 mm	1
3	HW405-4010	L1521	TP10	HW-Nozzle double N, 1.0 mm	1
	HW405-4015	L1522	TP15, HCH-TP1515	HW-Nozzle double N, 1.5 mm	1
	HW405-4020	L1523	TP20, HCH-TP1520	HW-Nozzle double N, 2.0 mm	1
	HW405-4025	L1524	TP25, HCH-TP1525	HW-Nozzle double N, 2.5 mm	1
	HW405-4030	L1526	TP30, HCH-TP2030	HW-Nozzle double N, 3.0 mm	1
	HW405-4040	L1525	TP40	HW-Nozzle double N, 4.0 mm	1

Optics

Centricut part number	Reference number	Type	Diameter	Focal length	Edge thickness
Lenses					
HW405-5270	355270	MEN	2.0"	5.0"	.378"
HW405-7143	527143	MEN	2.0"	7.5"	.378"
HW405-4913	114913	MEN	2.0"	10"	.378"

Centricut part number	Reference number	Type	Diameter	Edge thickness
Windows				
PT317-1551	P0595-61551, P0595-58601-61551	FS	37.00 mm	7.00 mm

Optics care

Centricut part number	Reference number	Description	Pkg qty
TR300-6452		Lens cleaning Tiffen paper (50 pcs)	1
TR300-1115		Lens cleaning pre-cut cotton (100 pcs)	1
TR300-1010	AL1010	Dropper, lens cleaning fluid	1
TR300-1112		Optical cleaning fluid	1
TR300-0699	70675699 REVA	Lens cleaning swabs (25 pcs)	1
TR300-7991	27991	Polyester wipes 4" x 4" (100 pcs)	1
TR301-0282		Injector	1
TR300-LSA		Lens stress analyzer	1
TR300-255	AL255	Magnifying loop	1
TR300-271	AL271	Base, mirror maintenance	1
TR300-7388	787388	Mirror polish .1UM 250ML	1

Centricut®

Resources

Sensor cones

Centricut sensor cones provide substantial cost savings without sacrificing performance or quality

- Available for Amada, Mazak, Mitsubishi and Precitec
- Delivers the same OEM performance at a lower cost
- Unmatched performance and reliability
- Engineered and manufactured to Hypertherm's precise quality standards
- Backed by our one-year warranty and 100% satisfaction guarantee

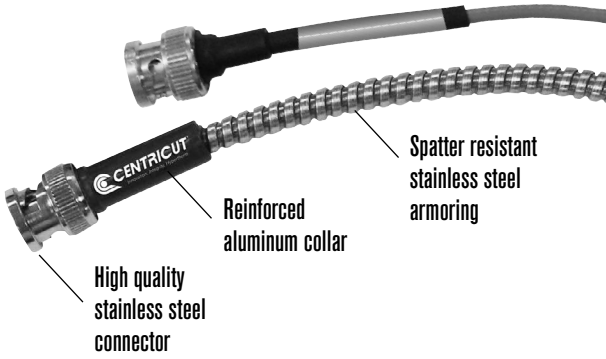
Centricut part number	OEM	Reference number	Description
AM343-0091	Amada	71360091	AM-Sensor cone, HS95 mini
AM343-1621	Amada	71341621	AM-Sensor cone, HS95
AM343-9107	Amada	ECO cone	AM-Sensor cone, ECO
AM343-1690	Amada	71341690	AM-Sensor cone, HS98
AM343-L3015C	Amada	71374509	AM-Sensor cone, LC3015
PT347-3323	Mazak	HNP	PT-Sensor cone, HNP
MZ335-HNPS	Mazak	HNPS	MZ-Sensor cone, HNP short version
PT347-0007	Mazak	56743300500	PT-Sensor cone, HNZ (Mazak)
PT347-0011	Mitsubishi	P0354-110-00002	PT-Sensor cone, HNZ (Mitsubishi)
MB334-W429A	Mitsubishi	P0461-270-00001	MB-Sensor cone, W429A
PT347-0238	Precitec	BQ930D238G01	PT-Sensor cone, HNZ SMA
PT347-8001	Precitec	P0361-203-00001	PT-Sensor cone, 2.5/J
PT347-0522	Precitec	P0599-520-00002	PT-Sensor cone, LRC
PT347-1145	Precitec	P0380-140-0002, P0380-130-00001, 281145	PT-Sensor cone, DZ

*Sensor cone repair service is available for most sensor cones in North America and select international regions. For more information contact Ctlaser@Hypertherm.com.

Armored sensor cables

Centricut armored sensor cables outlast standard OEM cables

- Available for all major brands
- Robust design with extreme temperature rating (900–1200°)
- Longer life reduces downtime and production loss
- Spatter resistant stainless steel armoring
- Reinforced collars and high-quality connector



Armored sensor cables

Centricut part number	OEM	Reference number	Description
AM308-8965	Amada	71398965	AM-Sensor cable, 305 mm (12")
AM308-8965A	Amada	71398965	AM-Sensor cable, 305 mm (12") premium, armored
AM313-1901	Amada		AM-Sensor cable, 305 mm (12")
AM313-1901A	Amada	71341630	AM-Sensor cable HS-5, 305 mm (12") premium, armored
AM313-8292	Amada	71398292	AM-Sensor cable dual shield, 7 meters
AM313-9851A	Amada	71369851	AM-Sensor cable, 230 mm (8") premium
CN306-0654A	Cincinnati	909654, 922686	CN-Sensor cable, 114 mm (4.5") armored
CN306-0951A	Cincinnati	842951	CN-Sensor cable, 140 mm (5.5") armored
CN306-2951	Cincinnati	842951, PLTTW0015	CN-Sensor cable, 140 mm (5.5")
CN306-9654	Cincinnati	909654, 922686, PLTTW0002	CN-Sensor cable, 114 mm (4.5") armored
MZ335-0111A	Mazak	4674330111	MZ-Sensor cable, 280 mm (11") armored
MZ335-0181A	Mazak	46743300181	MZ-Sensor cable, 317.5 mm (12.5") armored
MZ335-1330A	Mazak	46683301330	MZ-Sensor cable, 305 mm (12") armored
MZ335-1980A	Mazak	46683301980	MZ-Sensor cable, 280 mm (11") armored
MZ335-5320	Mazak	6143355320	MZ-Sensor cable, 70 mm (2.8") armored
MZ335-630A	Mazak	00BSBA630MNC	MZ-Sensor cable, 630 mm (25") armored
MZ335-8290	Mazak	46143308290	MZ-Sensor cable, 75 mm (3")
NT426-1682	NTC	4R029911-001, J482D	NT-Sensor cable, 216 mm (8.5")
NT426-4991	NTC	3-0104991	NT-Sensor cable 0-0BNC/MCX, 482 mm (19")
NT426-7492	NTC	3-0117492	NT-Sensor cable 90BNC/90BNC, 482 mm (19")
NT426-8677	NTC	4R028677-001	NT-Sensor cable, 508 mm (20") armored
PR361-3150	Prima	820.63.150	PR-Sensor cable, 150 mm (6")
PT347-0014	Precitec	P36015000300, KE 300 gw Z MM	PT-Sensor cable OEM
PT347-0015A	Precitec	00B-15	PT-Sensor cable, 380 mm (15")
PT347-0040	Precitec	00BB-A-17i, BEC004-000.4	PT-Sensor cable, 431 mm (17") armored
PT347-0101A	Precitec	P0360-100-00500	PT-Sensor cable, 500 mm (20") armored
PT347-0181	Precitec	46743300181	PT-Sensor cable
PT347-0250	Precitec	342475	PT-Sensor cable, 250 mm (10") armored
PT347-0300A	Precitec	P0492-014-00300	PT-Sensor cable KE, 300 mm (12") armored
PT347-0450	Precitec	P0497-002-00450	PT-Sensor cable, 450 mm (17.7")
PT347-KS13	Precitec/Gunkyo	00BMTKA-A-HS500mm	PT-Sensor cable, 390 mm (15.5") armored
PT347-06000EM	Precitec	P0360-210-00600	PT-Sensor cable, 600 ZWW OEM
PT347-1250	Precitec	D5001-040-00250	PT-Sensor cable, 250 mm (10") armored
PT348-0390	Precitec		PT-Sensor cable, 390 mm (15.5")
TR301-0930	Trumpf	280930	TR-Sensor cable, 152 mm (6") armored
TR301-1086	Trumpf	351086, S0492-001-00000	TR-Sensor cable
TR301-7833	Trumpf	227833	TR-Sensor cable, 432 mm (17")
TR301-9983	Trumpf	359983, 342474	TR-Sensor cable, 190 mm (7.5") armored

Lens cleaning tips

Centricut supplies suitable for all OEM CO_2 and fiber laser lenses

- Lens maintenance base is designed to secure a wide range of optics sizes for the cleaning process
- Centricut optical cleaning fluid is a safe, economical alternative to traditional high-purity and reagent-grade solvents
- Cleaning materials suited for all lens cleaning needs; lens paper, polyester swabs and polyester wipes

Lens paper

Recommended for the routine maintenance cleaning of flat lenses.

Polyester swabs

Recommended for cleaning curved lenses and where a more aggressive cleaning is required (interchangeable with polyester wipes).

Polyester wipes

Recommended for cleaning CO_2 and fiber lenses and windows (interchangeable with polyester swabs and lens paper).

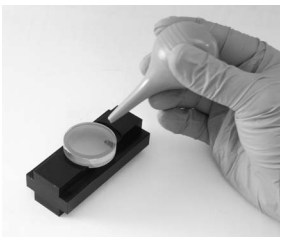
Product description	Part number	Quantity per order
Optical cleaning fluid (3 oz.)	TR300-1112	1
Lens cleaning swab	TR300-0699	25
Lens cleaning paper, Tiffen	TR300-6452	50
Polyester wipes 4" x 4"	TR300-7991	100
Base, lens maintenance	TR300-271	1

Lens paper

Recommended for the routine maintenance cleaning of flat lenses.

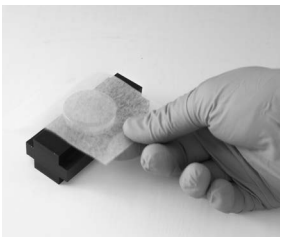
You will need:

- Lens maintenance base (lens holder)
- Optical cleaning fluid
- Air bulb
- Lint-free lens paper
- Latex or rubber gloves



To get started

Using rubber gloves, place the lens in the lens holder and remove all loose contaminants with an air bulb. When contaminants are no longer visible, begin the cleaning process.

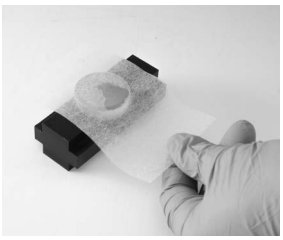


Step 1

Place lens paper over the optic, covering it completely.

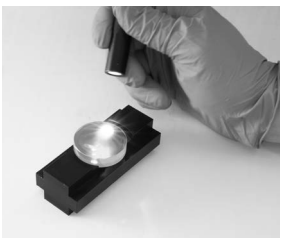
Step 2

Apply a couple drops of lens cleaning fluid to the lens paper (far side of the lens).



Step 3

Slowly pull the lens paper across the lens so the cleaning fluid comes in contact with the entire lens surface. Finish pulling the paper across so all of the fluid has dried from the lens.



Step 4

Inspect the surface of the lens for dust and cleaning residue using a flashlight. Examine the lens from different angles. Repeat the process on the other side of the lens.

Final step:

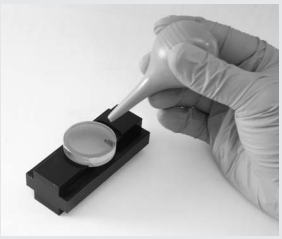
Place the cleaned lens in the machine quickly to avoid contamination from airborne particles. If spots, pits, or scratches are still noticeable, the lens may need to be replaced.

Polyester swabs

Recommended for cleaning curved lenses and where more aggressive cleaning is required. Interchangeable with polyester wipes.

You will need:

- Lens maintenance base (lens holder)
- Optical cleaning fluid
- Air bulb
- Polyester swabs
- Latex or rubber gloves

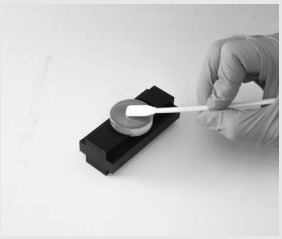


To get started

Using rubber gloves, place the lens in the lens holder and remove all loose contaminants with an air bulb. When contaminants are no longer visible, begin the cleaning process.

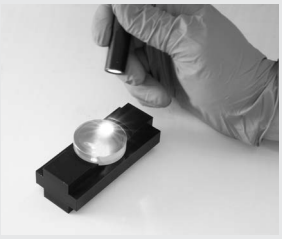
Step 1

Place a few drops of the optical cleaning fluid onto the swab.



Step 2

Move the larger dirt particles and then finer contaminants to the edge of the lens using the swab. Do not rest the swab on the lens or on the work table. Do not reuse swabs.



Step 3

Inspect the surface of the lens for dust and cleaning residue using a flashlight. Examine the lens from different angles. Repeat the process on the other side of the lens.

Final step:

Place the cleaned lens in the machine quickly to avoid contamination from airborne particles. If spots, pits, or scratches are still noticeable, the lens may need to be replaced.

Polyester wipes

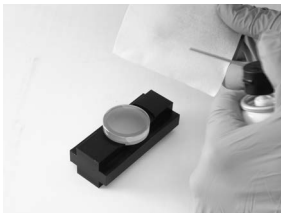
Recommended for cleaning CO_2 and fiber lenses and windows. Interchangeable with polyester swabs and lens paper.

You will need:

- Lens maintenance base (lens holder)
- Optical cleaning fluid
- Air bulb
- Polyester wipes
- Latex or rubber gloves

To get started

Using rubber gloves, place the lens in the lens holder and remove all loose contaminants with an air bulb. When contaminants are no longer visible, begin the cleaning process.

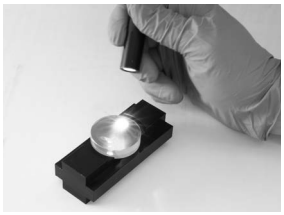


Step 1

Place a few drops of the optical cleaning fluid onto the polyester wipe

Step 2

Place the wipe with the wet side down on the lens and slide it across the lens, applying light pressure to the top of the wipe. Avoid contamination to the wipe and do not reuse wipes.



Step 3

Inspect the surface of the lens for dust and cleaning residue using a flashlight. Examine the lens from different angles. Repeat the process on the other side of the lens.

Final step:

Place the cleaned lens in the machine quickly to avoid contamination from airborne particles. If spots, pits, or scratches are still noticeable, the lens may need to be replaced.

Steps to help optimize cut quality.

Striation marks, angularity and dross tell the story.

Optimizing CO_2 and fiber lasers to achieve maximum cut quality is a very important step in the overall cutting process. The critical points that produce good cuts are the width of the kerf (the material that is lost during the cut), oxidation and roughness of the cut surface, the geometry of the cut parts and the allowable tolerances. Some factors to be considered are the cut speed or 'feed rate', beam focus, gas pressure, standoff and nozzle size/type.

Factory cut chart settings

The following samples show 12 mm, 6 mm and 3.2 mm (1/2", 1/4" and 10 ga.) mild steel, cut with O_2 on a 2 kW fiber laser with one variable changed to show how cut quality is affected. The adjustments will be similar for all CO_2 and fiber laser, cutting mild steel with O_2.

Is the kerf too narrow?

When the kerf is too narrow the cut will have a very smooth edge on the top, a lack of oxidation on the bottom and/or heavy dross.

Probable causes:

- Focus is too low
- Feed rate is too fast
- Gas pressure is too low
- Nozzle size is too small
- Standoff is too low

Is the kerf too wide?

When the kerf is too wide the cut will have a rougher edge, more self burning in the corners of the part, more angularity on the cut edge and occasionally, dross.

Probable causes:

- Focus is too high
- Feed rate is too slow
- Gas pressure is too high
- Nozzle size is too big
- Standoff is too high
- Incorrect nozzle type

Follow these steps to optimize cut quality:

1. Use the closest known settings for the material being cut.
2. Use a test part that has both interior and exterior features.
3. Verify that the lens and/or window is clean and in good condition.
4. Verify that the nozzle is centered properly and is in good condition.
5. Adjust the focus up and down until the cut quality starts to get bad and then set to the middle of that range.
6. Adjust the gas pressure up and down until the cut starts to get bad and then set to the middle of that range.
7. Adjust the federate up by 5% increments. When the cut starts to get bad, set the feed rate 10% slower.

Strike a balance between heat levels and gas flow

Cutting mild steel with a laser is a balance of how much material is heated by the laser beam and how much assist gas flows through the cut.

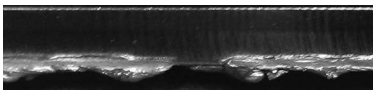
- Heating up too small of an area, or not having enough assist gas flow through the cut will result with the kerf (width of the cut) being too narrow.
- Heating up too large of an area or having too much assist gas flow through the cut will result in the kerf being too wide.

3.2 mm (10 ga.) mild steel cut resulting in too narrow kerf

Factory cut chart settings

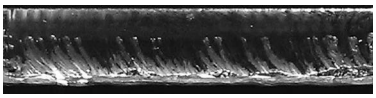
Focus is too low

The kerf is too narrow and doesn't allow enough O_2 into the cut to remove all the molten material.



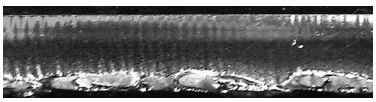
Feed rate is too fast

The cut striations are trailing the direction of cutting and there is not enough time to remove all the molten material.



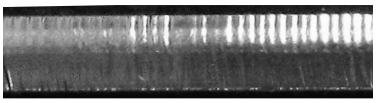
Gas pressure is too low

There is not enough O_2 to remove all the molten material.



Stand off is too low

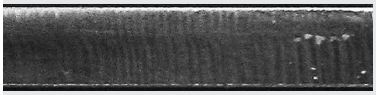
The focus spot is in the wrong location, causing the rough edge.



Cut direction

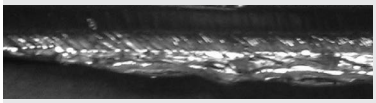
3.2 mm (10 ga.) mild steel cut resulting in too wide kerf

Factory cut chart settings



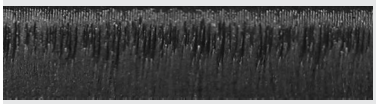
Focus is too high

The laser is melting more material than can be removed from the cut.



Feed rate is too slow

The cut surface is too rough and productivity is decreased.

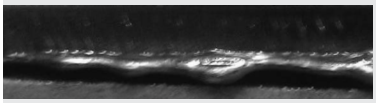


Gas pressure is too high

Too much O_2 results in overheating of the cut and causes intermittent gouges.

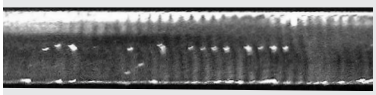
Stand off is too high

The laser is melting more material than can be removed from the cut.



Nozzle size is too big

Too much O_2 results in overheating of the cut and causes intermittent gouges.

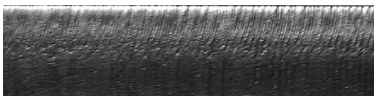


Cut direction

*Above samples have been cut with O_2 on 2 kW fiber laser. Results will be similar for CO_2 laser cutting mild steel with O_2.

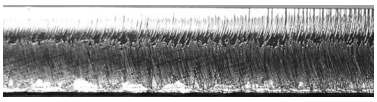
6 mm (1/4") mild steel cut resulting in too narrow kerf

Factory cut chart settings



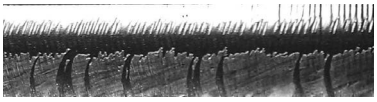
Focus is too low

The kerf is too narrow and doesn't allow enough O_2 into the cut to remove all the molten material.



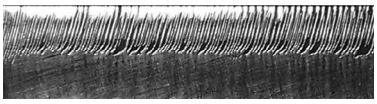
Feed rate is too fast

The cut striations are trailing the direction of cutting and there is not enough time to remove all the molten material.



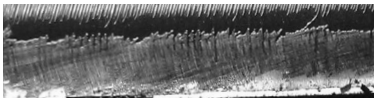
Gas pressure is too low

There is not enough O_2 to remove all the molten material.



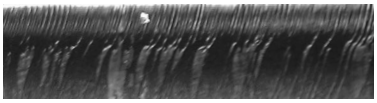
Stand off is too low

The focus spot is in the wrong location, causing the rough edge.



Nozzle size is too small

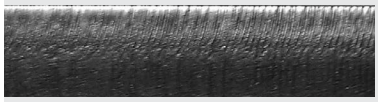
There is not enough O_2 to cut uniformly



Cut direction

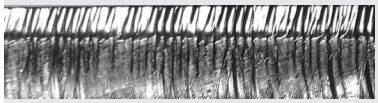
6 mm (1/4") mild steel cut resulting in too wide kerf

Factory cut chart settings



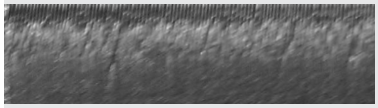
Focus is too high

The wider focus spot is letting too much O_2 into the cut and burning the material.



Feed rate is too slow

The cut surface is too rough and productivity is decreased.

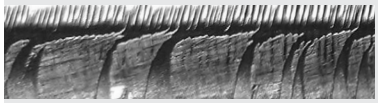


Gas pressure is too high

Too much O_2 is entering the cut, causing a rougher edge and inconsistent cutting.

Stand off is too high

Too much O_2 is entering the cut, causing a rougher edge and inconsistent cutting.



Nozzle size is too big

Too much O_2 results in overheating of the cut and causes intermittent gouges.

Nozzle type is incorrect

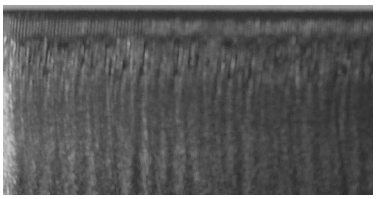
The shape of the gas flow is incorrect, causing a rougher edge.

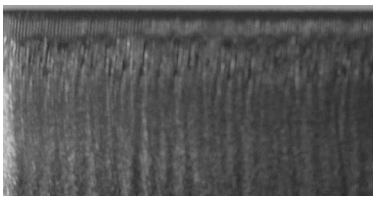
Cut direction

*Above samples have been cut with O_2 on 2 kW fiber laser. Results will be similar for CO_2 laser cutting mild steel with O_2.

12 mm (1/2") mild steel cut resulting in too narrow kerf

Factory cut chart settings

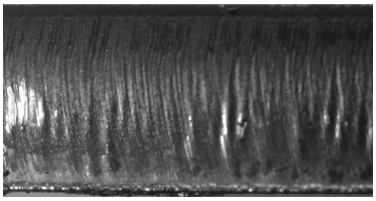


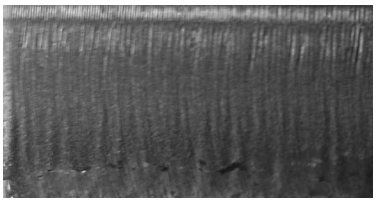


Factory cut chart settings

Focus is too low

The kerf is too narrow and doesn't allow enough O_2 into the cut to remove all the molten material.



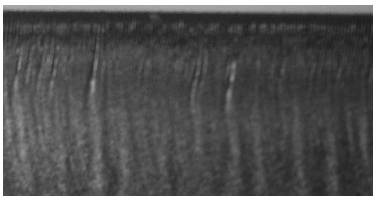


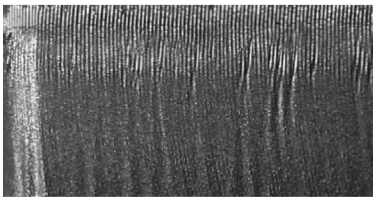
Stand off is too low

The kerf is too narrow to allow enough O_2 into the cut. The oxidation is not covering the entire surface and cutting will be inconsistent.

Feed rate is too fast

The machine is moving too fast to allow enough O_2 into the cut for consistent cutting.



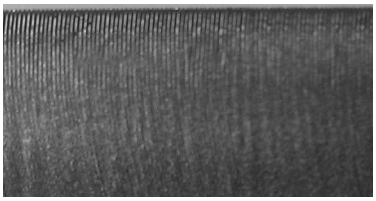


Nozzle size is too small

There is not enough O_2 to cut uniformly

Gas pressure is too low

The pressure is too low to allow enough O_2 into the cut. The oxidation is not covering the entire surface and cutting will be inconsistent.



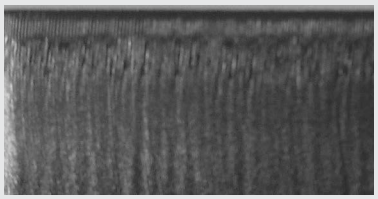
Cut direction

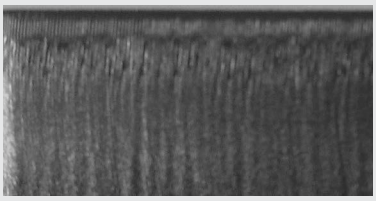
Cut direction

*Above samples have been cut with O_2 on 2 kW fiber laser. Results will be similar for CO_2 laser cutting mild steel with O_2.

12 mm (1/2") mild steel cut resulting in too wide kerf

Factory cut chart settings

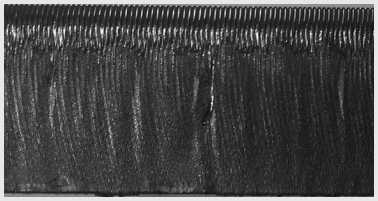


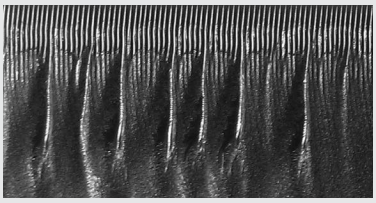


Factory cut chart settings

Focus is too high

Too much O_2 is entering the cut causing intermittent over burning.



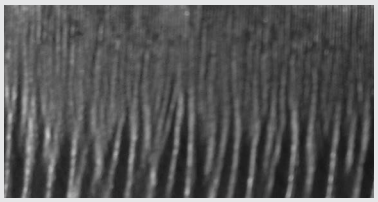


Stand off is too high

Too much O_2 is entering the cut resulting in intermittent over burning.

Feed rate is too slow

The machine is moving too slow resulting in the over burning of the bottom half of the cut. The slower feed rate also reduces productivity.

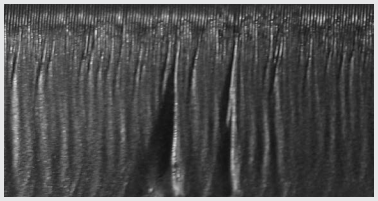


Incorrect nozzle type

The gas flow shape is not correct resulting in inconsistent cutting.

Gas pressure is too high

Too much O_2 is entering the cut resulting in intermittent over burning.



Cut direction

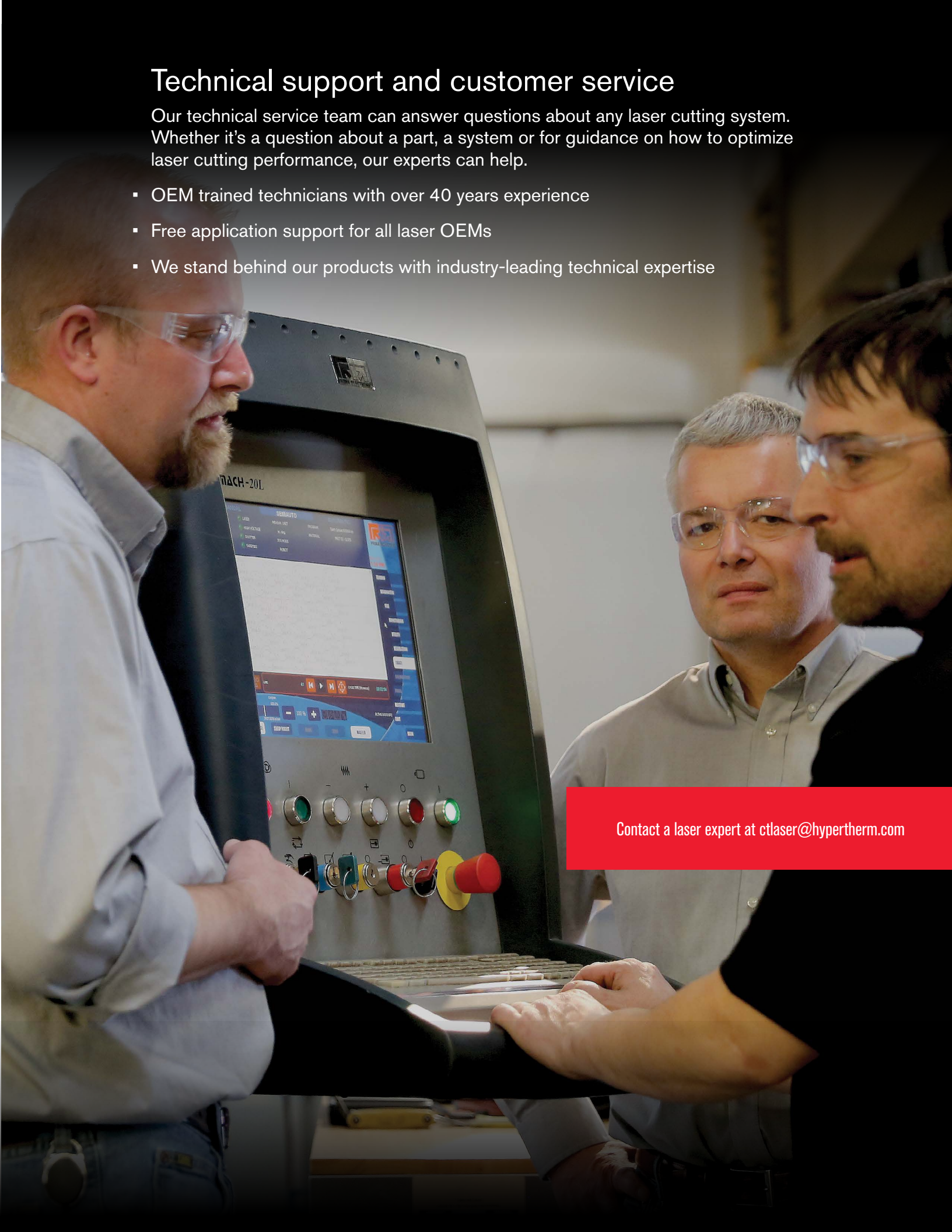
Cut direction

*Above samples have been cut with O_2 on 2 kW fiber laser. Results will be similar for CO_2 laser cutting mild steel with O_2.

Technical support and customer service

Our technical service team can answer questions about any laser cutting system. Whether it's a question about a part, a system or for guidance on how to optimize laser cutting performance, our experts can help.

- OEM trained technicians with over 40 years experience
- Free application support for all laser OEMs
- We stand behind our products with industry-leading technical expertise



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