

8.0 TORCH OPERATION

Torch Parts Selection

The application will determine which torch parts must be used. Refer to the cut charts for the proper torch parts to install for a selected application.



CAUTION

Do not interchange parts. Make sure all torch parts correspond with the plasma and shield gases in use for the application.

Pre-Setting Power Supply Controls

Set the Power Supply controls prior to operating the system as described in the power supply Operating Manual. Refer to the cutting charts for the proper cutting parameters for the application.

Recommended Cutting Speeds

Cutting speed depends on material and thickness. The following factors may affect system performance:

- Torch parts wear; gas quality and mass flow / pressure; operator experience; torch standoff height; proper work cable connection; alloy content of material; cutting table capabilities & accuracy.

NOTE

This information represents realistic expectations using recommended practices and well-maintained systems. Actual speeds may vary from those shown in the charts depending on the alloy content of the selected material. Voltage ratings may vary depending on the CNC, cutting table, or height controller.

For complete cutting speed chart data refer to the following pages.

Consumables Notes

Always assemble the consumable parts properly. Improper assembly may damage the parts or the torch head. Ensure that parts are seated together correctly.

Always check the shield gas distributor for charring when changing parts. Do not use the distributor if it is charred. Replace the shield gas distributor regularly to ensure proper performance.

Operational Notes

Always purge the torch after changing consumables or if the power supply has been shut off. The power supply's built-in purge function may not be enough to properly purge the torch. Manually flow gas with the 'Test Cut Flow' and 'Test Pre-Flow' functions to help remove any remaining coolant from the lines.

Slightly increasing the preflow pressure may increase piercing ability on thicker materials. However, increasing the preflow pressure too much may affect plasma starting reliability (misfiring).

Decreasing preflow pressure may improve piloting. Preflow pressure can be reduced without affecting cut performance as long as the pilot arc still transfers to the plate well. Decreasing preflow pressure too much will affect the ability to transfer the arc to the plate and cause damage to the tip.

Notes on Chart Measurements

Pressure measurements in the charts are in psi(g), not psi(a). 0 psi(g) = 14.7 psi(a) (1 atmosphere).

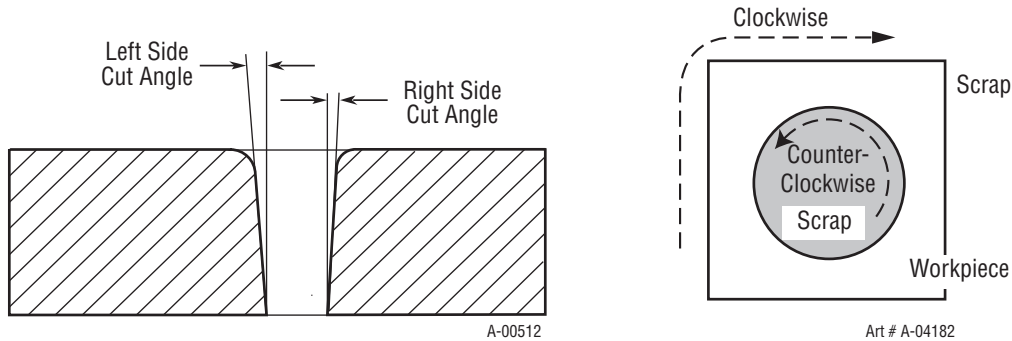
Ball settings are at the center of the gauge ball.

Ohmic Sensing

Ohmic sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Direction of Cut

The plasma gas stream swirls as it leaves the torch to maintain a stable arc column. This swirl effect results in one side of a cut being more square than the other. Viewed along the direction of travel, the right side of the cut is more square than the left.



Side Characteristics Of Cut

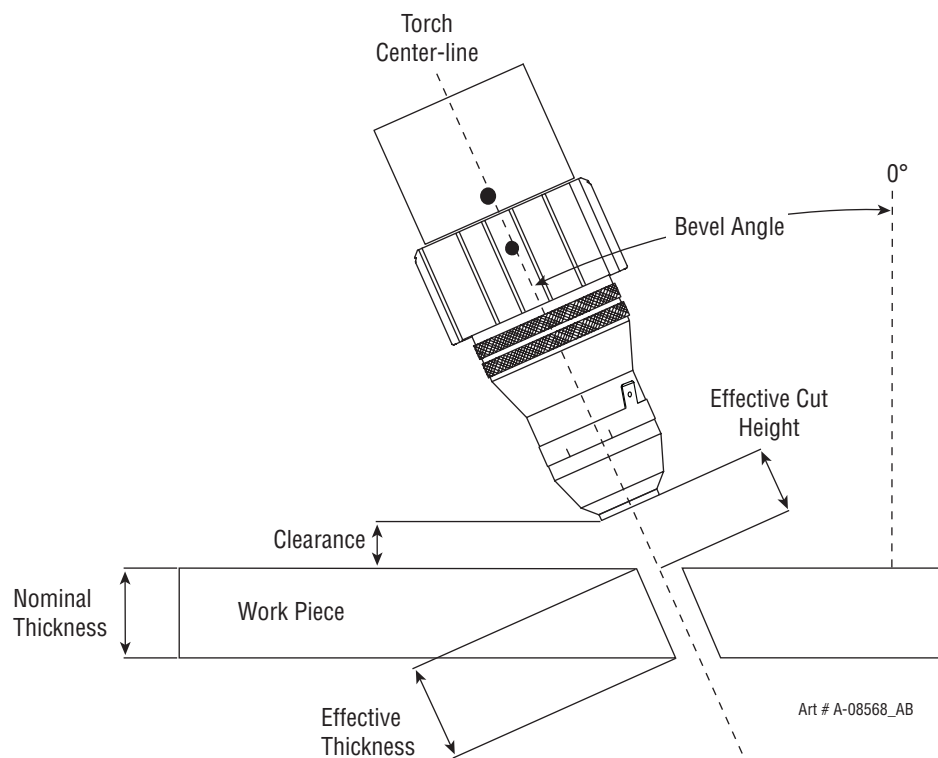
To make a square - edged cut along an inside diameter of a circle, move the torch counterclockwise around the circle. To keep the square edge along an outside diameter cut, move the torch in a clockwise direction.

Underwater Cutting

Cutting on a water table either underwater or with the water touching the plate or with a water muffler system is not recommended. If a water table is used the water level must be a minimum of 4 inches / 100 mm from the bottom of the plate. Failure to follow this recommendation could result in poor cut quality and short consumable parts life.

Bevel Cutting Definitions

Bevel Angle	The angle between the center line of the torch and a line that is perpendicular to the workpiece. If the torch is perpendicular to the workpiece, the Bevel Angle is zero. The maximum Bevel Angle is 45°.
Nominal Thickness	The vertical thickness of the workpiece.
Effective Thickness	The length of the cut edge, or the distance the arc travels through the material while cutting. Effective Thickness is equal to the nominal thickness divided by the cosine of the bevel angle. Effective Thicknesses are listed in the cut chart.
Clearance	The vertical distance from the lowest point of the torch to the surface of the workpiece.
Effective Cut Height	The linear distance from the center of the torch outlet to the workpiece surface along the torch center-line. A range of Effective Cut Height distances are listed in the cut chart. The smallest number is for a straight cut (bevel angle = 0°). The largest number is for a 45° bevel cut with a clearance of 2 mm (0.125 in).
Arc Voltage	The Arc Voltage setting is dependent on the Bevel Angle and the setup of the cutting system. The Arc Voltage setting on one system may be different from a second system even if the workpiece is the same thickness. The arc voltages for bevel cutting are not supplied in the bevel cut charts.

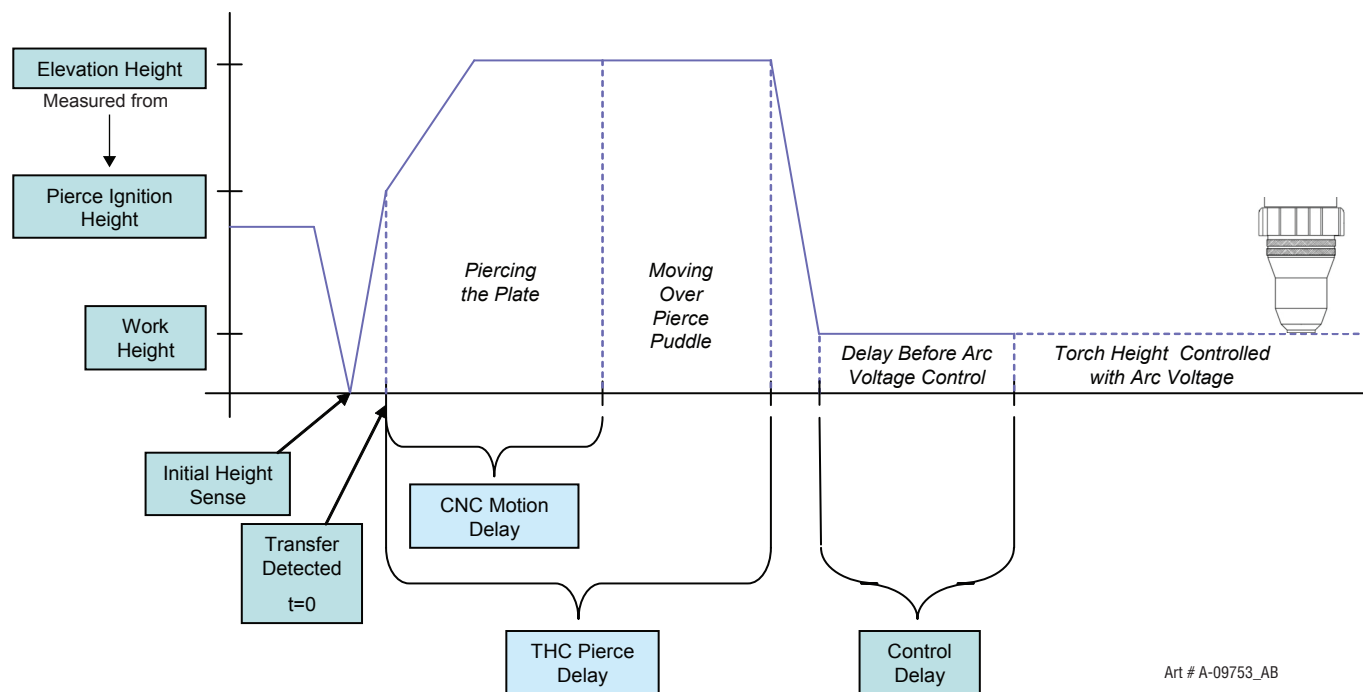


General Definitions:

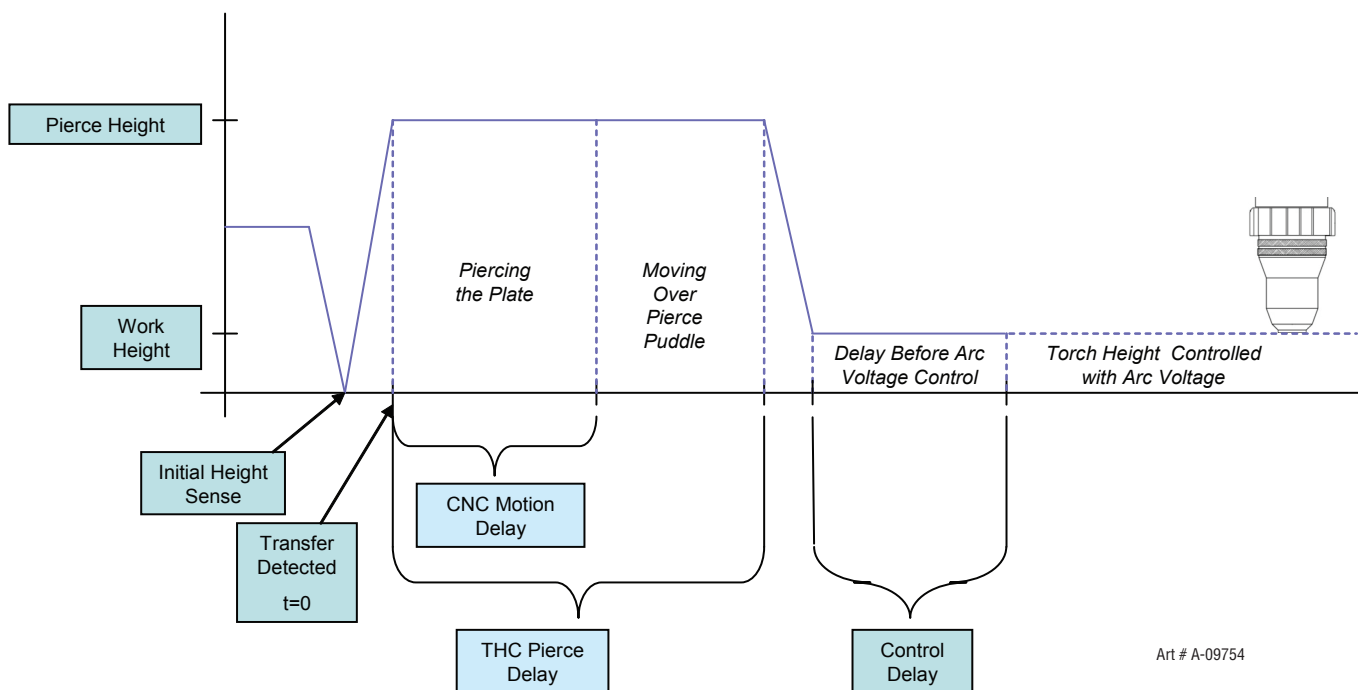
THC	Torch Height Control
Arc Voltage	Voltage measurement between the electrode and the work piece which is used to control the torch to work distance during cutting.
Cut Height	Distance between the plasma torch and the work piece during cutting.
Pierce Ignition Height	Torch to work distance during arc transfer. This setting is typically lower when using a THC with elevation height in order to increase transfer reliability.
Elevation Height	Distance from Pierce Ignition Height that the torch raises to in order to prevent torch damage during plate piercing.
THC Pierce Delay	Time following arc transfer that the torch remains at Pierce or Elevation Height. This is often longer than the CNC Motion Delay in order to allow the torch to clear the pierce puddle.
CNC Motion Delay	Time following arc transfer to allow the arc to pierce through the plate before the table XY motion starts.
Control delay	Often called AVC delay, this is time starting when torch is moved to Cut Height until THC starts controlling height to the sampled arc voltage.
Cut Speed	Recommended cut speed based on the material thickness, torch parts and gas combination used.
Kerf Width	The width of material removed during the cut.

Understanding Time-line and Cutting Process of THC

Torch Height Control (THC) WITH Elevation Height



Torch Height Control (THC) WITHOUT Elevation Height



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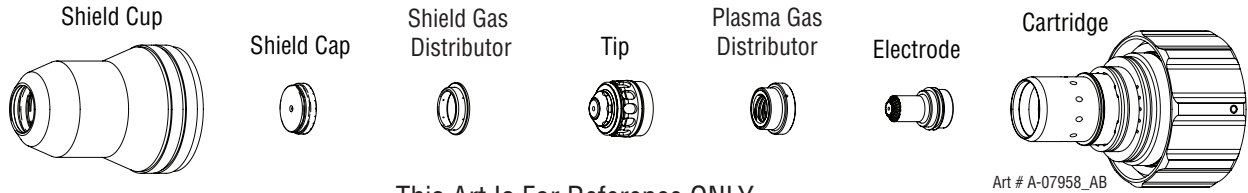
8.01 Standard Cutting Up To 100 Amp

Mild Steel

30A

O₂ Plasma / O₂ Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	4 / 8	16 / 33
Cutflow	15 / 32	- / -



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1098	21-1272	21-1097	21-1041	21-1069	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (O ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
20	-	0.036	60	40	70	N/A	25	105	0.080	0.2	0.090	0.060	0.8	0.120	130	0.2	0.058
16	-	0.060	60	40	70	N/A	25	111	0.080	0.3	0.090	0.060	0.7	0.120	70	0.3	0.077
14	-	0.075	60	40	70	N/A	25	111	0.100	0.4	0.100	0.080	0.6	0.150	65	0.4	0.081
12	-	0.105	60	40	70	N/A	25	111	0.110	0.4	0.100	0.080	0.6	0.150	55	0.4	0.084
10	-	0.135	60	40	70	N/A	25	112	0.130	0.5	0.125	0.120	0.5	0.200	50	0.5	0.087
-	3/16	0.188	60	40	70	N/A	25	116	0.150	0.6	0.150	0.150	0.4	0.250	30	0.6	0.080

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma(O ₂)		Shield (O ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
1	4.1	40	4.8	N/A	1.7	106	2.0	0.2	2.3	1.5	0.8	3.0	3090	0.2	1.5
1.5	4.1	40	4.8	N/A	1.7	111	2.0	0.3	2.3	1.5	0.7	3.0	1840	0.3	1.9
2	4.1	40	4.8	N/A	1.7	111	2.6	0.4	2.5	2.0	0.6	3.8	1620	0.4	2.1
2.5	4.1	40	4.8	N/A	1.7	111	2.7	0.4	2.5	2.0	0.6	3.8	1450	0.4	2.1
3	4.1	40	4.8	N/A	1.7	111	3.0	0.4	2.8	2.5	0.6	4.4	1340	0.4	2.2
4	4.1	40	4.8	N/A	1.7	114	3.5	0.5	3.4	3.4	0.5	5.6	1050	0.5	2.1
5	4.1	40	4.8	N/A	1.7	117	3.9	0.6	3.9	3.9	0.4	6.6	670	0.6	2.0

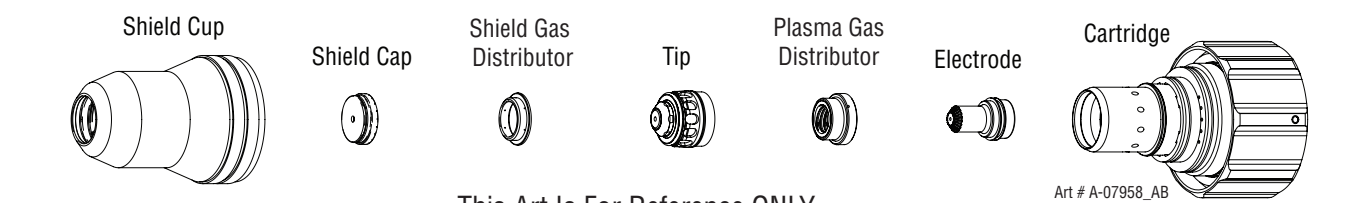
BOLD TYPE indicates maximum piercing parameters.

Stainless Steel

30A

Air Plasma / Air Shield

Flow Rates (SLPM / SCFH)	
Air	
Preflow	22 / 47
Cutflow	40 / 85



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1033	21-1274	21-1059	21-1045	21-1077	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
26	-	0.019	60	64	120	20	120	87	0.020	0.0	0.040	0.030	0.7	0.040	350	0.0	0.029
24	-	0.025	60	64	120	20	120	85	0.020	0.0	0.040	0.030	0.7	0.040	320	0.0	0.028
22	-	0.031	60	64	120	20	120	80	0.020	0.0	0.040	0.030	0.7	0.040	310	0.0	0.034
20	-	0.038	60	64	120	20	120	75	0.020	0.1	0.060	0.040	0.6	0.060	300	0.1	0.025
18	-	0.050	60	64	120	20	120	78	0.020	0.2	0.070	0.040	0.5	0.080	150	0.2	0.032
16	-	0.063	60	64	120	20	120	76	0.020	0.2	0.070	0.040	0.5	0.080	110	0.2	0.030

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (Air)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
0.6	4.1	64	8.3	20	8.3	85	0.5	0.0	1.0	0.8	0.7	1.0	8300	0.0	0.7
0.8	4.1	64	8.3	20	8.3	80	0.5	0.0	1.1	0.8	0.7	1.1	7860	0.0	0.8
1	4.1	64	8.3	20	8.3	75	0.5	0.1	1.6	1.0	0.6	1.6	7190	0.1	0.7
1.5	4.1	64	8.3	20	8.3	77	0.5	0.2	1.8	1.0	0.5	2.0	3100	0.2	0.8
2	4.1	64	8.3	20	8.3	74	0.5	0.2	1.8	1.0	0.5	2.0	2600	0.2	0.7

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	20	40 / 2.8	70	80 / 5.5	93	0.100 / 2.5	0.100 / 2.5	0	0.4	300 / 7620	

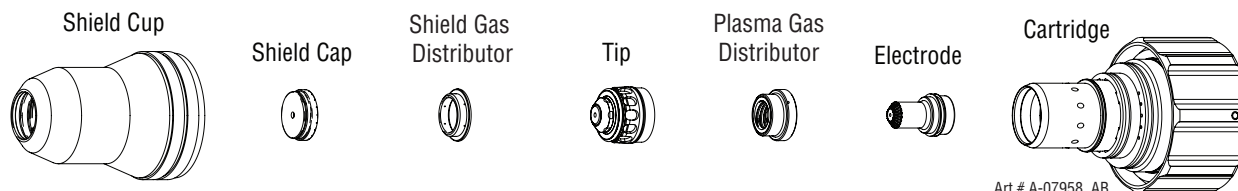
BOLD TYPE indicates maximum piercing parameters.

Stainless Steel

30A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	9 / 19	5 / 19
Preflow	28 / 59	5 / 19
Cutflow		



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1033	21-1274	21-1059	21-1045	21-1077	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
26	-	0.019	90	75	120	4	55	91	0.020	0.0	0.040	0.030	0.5	0.040	600	0.0	0.047
24	-	0.025	90	64	120	4	55	97	0.020	0.0	0.040	0.030	0.5	0.040	440	0.0	0.045
22	-	0.031	90	50	120	4	55	95	0.020	0.0	0.040	0.030	0.5	0.040	420	0.0	0.045
20	-	0.038	90	60	120	5	55	105	0.020	0.1	0.050	0.040	0.4	0.050	300	0.1	0.044
18	-	0.050	90	60	120	5	55	78	0.030	0.1	0.050	0.040	0.4	0.050	250	0.1	0.035
16	-	0.063	90	60	120	5	55	85	0.050	0.2	0.060	0.040	0.4	0.060	205	0.2	0.044

		GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (N ₂)		Shield (H ₂ O)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
0.6	6.2	67	8.3	4	3.8	96	0.5	0.0	1.0	0.8	0.5	1.0	12110	0.0	1.2	
0.8	6.2	51	8.3	4	3.8	96	0.5	0.0	1.0	0.8	0.5	1.0	10450	0.0	1.1	
1	6.2	60	8.3	5	3.8	102	0.5	0.1	1.3	1.0	0.4	1.3	7480	0.1	1.1	
1.5	6.2	60	8.3	5	3.8	83	1.1	0.2	1.4	1.0	0.4	1.4	5550	0.2	1.0	
2	6.2	60	8.3	5	3.8	93	1.9	0.3	1.8	1.0	0.4	1.8	3820	0.3	1.4	

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	20	40 / 2.8	70	80 / 5.5	93	0.100 / 2.5	0.100 / 2.5	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

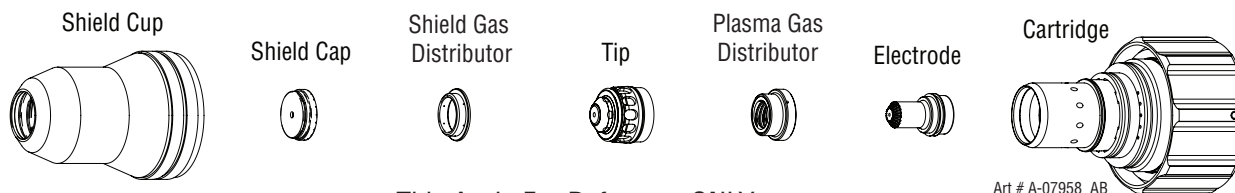
Note 2: Water source used for shield must be demineralized.

Aluminum

30A

Air Plasma / Air Shield

Flow Rates (SLPM / SCFH)	
Air	
Preflow	19 / 40
Cutflow	40 / 85



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1033	21-1274	21-1059	21-1045	21-1077	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	-	0.025	60	60	120	15	120	86	0.020	0.0	0.040	0.030	0.7	0.040	500	0.0	0.029
-	-	0.037	60	60	120	15	120	86	0.020	0.1	0.060	0.040	0.6	0.060	240	0.1	0.046
-	-	0.052	60	60	120	15	120	84	0.020	0.2	0.080	0.040	0.5	0.100	230	0.2	0.034
-	-	0.064	60	60	120	15	120	80	0.020	0.2	0.080	0.040	0.5	0.100	220	0.2	0.036

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (Air)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
1	4.1	60	8.3	15	8.3	86	0.5	0.1	1.6	1.0	0.6	1.7	6060	0.1	1.1
1.5	4.1	60	8.3	15	8.3	82	0.5	0.2	2.0	1.0	0.5	2.5	5690	0.2	0.9
2	4.1	60	8.3	15	8.3	75	0.5	0.2	2.0	1.0	0.5	2.5	5280	0.2	1.0

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	20	40 / 2.8	70	80 / 5.5	93	0.100 / 2.5	0.100 / 2.5	0	0.7	300 / 7620	

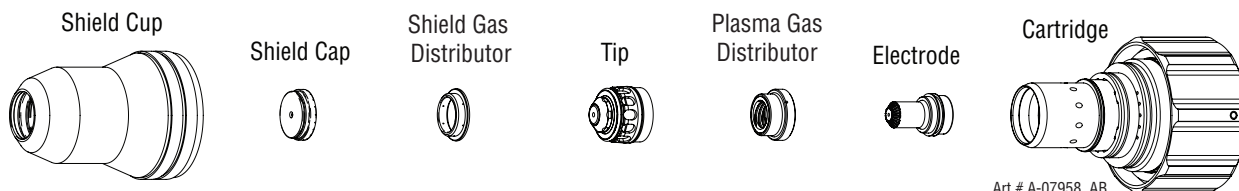
BOLD TYPE indicates maximum piercing parameters.

Aluminum

30A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	9 / 19	4 / 15
	21 / 44	4 / 15



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
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Material Thickness			GCM-2010						SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)	Shield (H ₂ O)												
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	-	0.025	96	55	120	4	55	103	0.030	0.0	0.070	0.040	0.4	0.080	230	0.0	0.034
-	-	0.037	96	55	120	4	55	103	0.030	0.1	0.070	0.040	0.4	0.080	220	0.1	0.045
-	-	0.052	96	55	120	4	55	103	0.030	0.2	0.070	0.040	0.4	0.080	150	0.2	0.031
-	-	0.064	96	55	120	4	55	103	0.030	0.2	0.070	0.040	0.4	0.080	110	0.2	0.036

Material Thickness			GCM-2010						SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)	Shield (H ₂ O)												
(mm)	(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
1	1	1	6.6	55	8.3	4	3.8	103	0.8	0.1	1.8	1.0	0.4	2.0	5310	0.1	1.1
1.5	1.5	1.5	6.6	55	8.3	4	3.8	103	0.8	0.2	1.8	1.0	0.4	2.0	3210	0.2	0.9
2	2	2	6.6	55	8.3	4	3.8	103	0.8	0.2	1.8	1.0	0.4	2.0	1550	0.2	1.1

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
		(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)					(Volts)	
	20 / 1.4	20	40 / 2.8	70	80 / 5.5	93	0.100 / 2.5	0.100 / 2.5	0	0.6	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

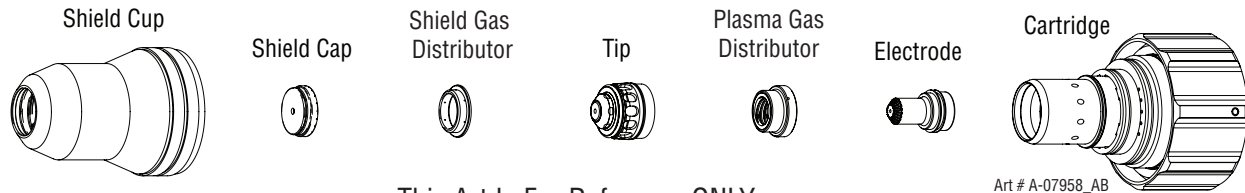
Note 2: Water source used for shield must be demineralized.

Mild Steel

50A

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	30 / 63
Cutflow	6 / 14	12 / 26



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1025	21-1272	21-1051	21-1041	21-1069	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
14	-	0.075	70	28	120	20	120	130	0.060	0.0	0.080	0.040	0.8	0.100	280	0.0	0.040
12	-	0.105	70	28	120	20	120	130	0.060	0.0	0.080	0.040	0.8	0.100	270	0.0	0.052
10	-	0.135	70	28	120	20	120	126	0.040	0.4	0.080	0.040	0.4	0.100	160	0.4	0.044
-	3/16	0.188	70	28	120	40	120	130	0.060	0.4	0.100	0.060	0.4	0.110	100	0.4	0.054
-	1/4	0.250	70	28	120	40	120	132	0.060	0.4	0.100	0.060	0.4	0.110	90	0.4	0.062

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (O ₂)		Shield (Air)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
2	4.8	28	8.3	20	8.3	130	1.5	0.0	2.0	1.0	0.8	2.5	7080	0.0	1.1	
2.5	4.8	28	8.3	20	8.3	130	1.5	0.0	2.0	1.0	0.8	2.5	6910	0.0	1.3	
3	4.8	28	8.3	20	8.3	128	1.3	0.2	2.0	1.0	0.6	2.5	5640	0.2	1.2	
4	4.8	28	8.3	28	8.3	128	1.2	0.4	2.2	1.2	0.4	2.6	3410	0.4	1.2	
5	4.8	28	8.3	40	8.3	130	1.5	0.4	2.5	1.5	0.4	2.8	2500	0.4	1.4	
6	4.8	28	8.3	40	8.3	132	1.5	0.4	2.5	1.5	0.4	2.8	2340	0.4	1.5	

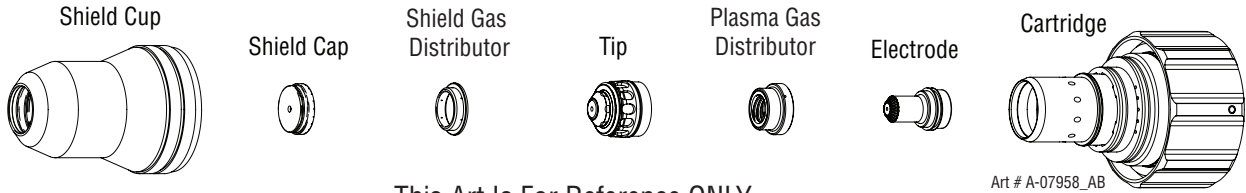
Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	40	40 / 2.8	75	80 / 5.5	143	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

Stainless Steel

50A

Air Plasma / Air Shield

Flow Rates (SLPM / SCFH)	
Air	
Preflow	60 / 127
Cutflow	49 / 104



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1034	21-1274	21-1060	21-1041	21-1078	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
14	-	0.078	100	62	120	75	120	109	0.060	0.0	0.090	0.060	0.4	0.120	180	0.0	0.044
12	-	0.109	100	62	120	75	120	114	0.060	0.0	0.100	0.080	0.4	0.150	130	0.0	0.049
10	-	0.141	100	62	120	75	120	118	0.060	0.1	0.110	0.100	0.3	0.180	120	0.1	0.050
-	3/16	0.188	100	62	120	75	120	124	0.080	0.3	0.125	0.120	0.1	0.200	70	0.3	0.059

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (Air)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
1.5	6.9	62	8.3	75	8.3	106	1.5	0.0	2.1	1.2	0.4	2.6	5350	0.0	1.0
2	6.9	62	8.3	75	8.3	109	1.5	0.0	2.3	1.5	0.4	3.1	4540	0.0	1.1
2.5	6.9	62	8.3	75	8.3	112	1.5	0.0	2.5	1.9	0.4	3.6	3740	0.0	1.2
3	6.9	62	8.3	75	8.3	115	1.5	0.0	2.6	2.2	0.4	4.0	3230	0.0	1.3
4	6.9	62	8.3	75	8.3	120	1.7	0.2	2.9	2.7	0.2	4.8	2600	0.2	1.4
5	6.9	62	8.3	75	8.3	125	2.1	0.3	3.3	3.2	0.1	5.2	1520	0.3	1.5

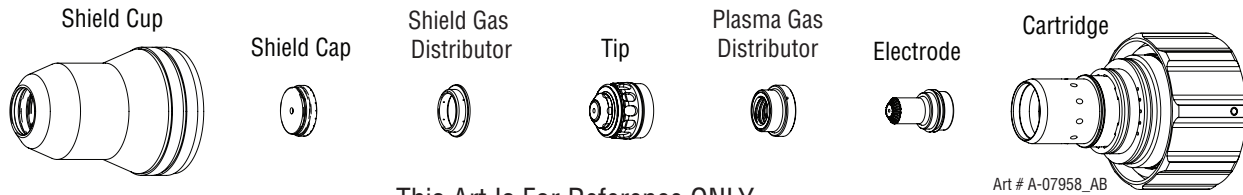
Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
		Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/min)	
	20 / 1.4	40	40 / 2.8	75	80 / 5.5	120	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

Stainless Steel

50A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	17 / 37	4 / 15
Cutflow	18 / 38	4 / 15



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1034	21-1274	21-1180	21-1041	21-1181	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
16	-	0.063	60	62	120	4	55	133	0.110	0.0	0.125	0.120	0.5	0.200	210	0.0	0.043
14	-	0.078	60	62	120	4	55	132	0.110	0.1	0.125	0.120	0.5	0.200	170	0.1	0.043
12	-	0.109	60	62	120	4	55	126	0.110	0.2	0.125	0.120	0.5	0.200	150	0.2	0.047
10	-	0.141	60	62	120	4	55	139	0.110	0.3	0.125	0.120	0.5	0.200	120	0.3	0.050
-	3/16	0.188	60	62	120	4	55	157	0.110	0.5	0.125	0.120	0.5	0.200	50	0.5	0.050

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
2	4.1	62	8.3	4	3.8	123	2.8	0.1	3.2	3.0	0.5	5.1	4310	0.1	1.1
2.5	4.1	62	8.3	4	3.8	128	2.8	0.1	3.2	3.0	0.5	5.1	3980	0.1	1.2
3	4.1	62	8.3	4	3.8	130	2.8	0.2	3.2	3.0	0.5	5.1	3660	0.2	1.2
4	4.1	62	8.3	4	3.8	145	2.8	0.4	3.2	3.0	0.5	5.1	2410	0.4	1.3

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm) / min	
	20 / 1.4	40	40 / 2.8	75	80 / 5.5	120	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

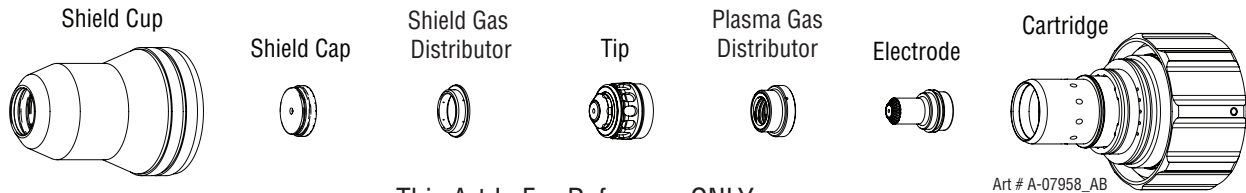
Note2: Water source used for shield must be demineralized.

Aluminum

50A

Air Plasma / Air Shield

Flow Rates (SLPM / SCFH)	
Air	
Preflow	60 / 128
Cutflow	50 / 106



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1034	21-1274	21-1060	21-1041	21-1078	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	-	0.064	100	60	120	75	120	124	0.100	0.0	0.125	0.120	0.4	0.200	140	0.0	0.060
-	-	0.079	100	60	120	75	120	124	0.102	0.0	0.125	0.120	0.4	0.200	117	0.0	0.063
-	-	0.097	100	60	120	75	120	125	0.105	0.0	0.125	0.120	0.4	0.200	90	0.0	0.067
-	-	0.120	100	60	120	75	120	129	0.110	0.0	0.125	0.120	0.4	0.200	60	0.0	0.068
-	3/16	0.188	100	60	120	75	120	133	0.120	0.2	0.125	0.120	0.2	0.200	40	0.2	0.074

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (Air)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
2	6.9	60	8.3	75	8.3	124	2.6	0.0	3.2	3.0	0.4	5.1	2990	0.0	1.6
2.5	6.9	60	8.3	75	8.3	125	2.7	0.0	3.2	3.0	0.4	5.1	2240	0.0	1.7
3	6.9	60	8.3	75	8.3	129	2.8	0.0	3.2	3.0	0.4	5.1	1590	0.0	1.7
4	6.9	60	8.3	75	8.3	131	2.9	0.1	3.2	3.0	0.3	5.1	1240	0.1	1.8
5	6.9	60	8.3	75	8.3	134	3.1	0.2	3.2	3.0	0.2	5.1	950	0.2	1.9

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm / min)	
	20 / 1.4	40	40 / 2.8	75	80 / 5.5	120	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

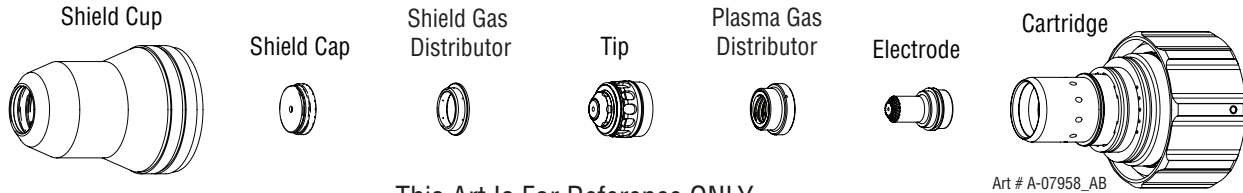
BOLD TYPE indicates maximum piercing parameters.

Aluminum

50A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	26 / 56	4 / 15
Cutflow	18 / 38	4 / 15



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1034	21-1274	21-1180	21-1041	21-1181	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	-	0.064	100	60	120	4	55	128	0.110	0.0	0.125	0.120	0.5	0.200	140	0.0	0.045
-	-	0.079	100	60	120	4	55	127	0.110	0.1	0.125	0.120	0.5	0.200	117	0.1	0.045
-	-	0.097	100	60	120	4	55	131	0.110	0.2	0.125	0.120	0.5	0.200	90	0.2	0.046
-	-	0.120	100	60	120	4	55	135	0.110	0.2	0.125	0.120	0.5	0.200	60	0.2	0.050
-	16/85	0.188	100	60	120	4	55	140	0.120	0.3	0.125	0.120	0.5	0.200	40	0.3	0.051

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (N ₂)		Shield (H ₂ O)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
2	6.9	60	8.3	4	3.8	127	2.8	0.1	3.2	3.0	0.5	5.1	2990	0.1	1.1	
2.5	6.9	60	8.3	4	3.8	131	2.8	0.2	3.2	3.0	0.5	5.1	2240	0.2	1.2	
3	6.9	60	8.3	4	3.8	135	2.8	0.2	3.2	3.0	0.5	5.1	1590	0.2	1.3	
4	6.9	60	8.3	4	3.8	138	2.9	0.3	3.2	3.0	0.5	5.1	1240	0.3	1.3	
5	6.9	60	8.3	4	3.8	141	3.1	0.3	3.2	3.0	0.5	5.1	950	0.3	1.3	

Marking 16A Arc Current	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/min)	
Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6mm.	20 / 1.4	40	40 / 2.8	75	80 / 5.5	120	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

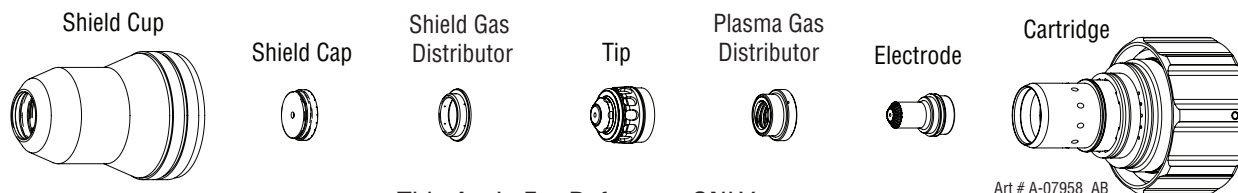
Note2: Water source used for shield must be demineralized.

Mild Steel

70A

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	44 / 94
Cutflow	10 / 21	25 / 52



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1026	21-1272	21-1152	21-1041	21-1170	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
16	-	0.060	46	35	120	41	120	143	0.070	0.1	0.080	0.040	1.0	0.100	300	0.1	0.073
14	-	0.075	46	35	120	41	120	145	0.100	0.1	0.090	0.060	1.0	0.120	250	0.1	0.072
12	-	0.105	46	55	120	60	120	147	0.100	0.2	0.090	0.060	0.9	0.120	225	0.2	0.078
10	-	0.135	46	55	120	60	120	148	0.100	0.2	0.100	0.080	0.9	0.150	180	0.2	0.071
-	3/16	0.188	46	55	120	60	120	149	0.115	0.4	0.125	0.120	0.7	0.200	130	0.4	0.077
-	1/4	0.250	46	55	120	60	120	151	0.120	0.5	0.125	0.120	0.6	0.200	100	0.5	0.083

		GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (O ₂)		Shield (Air)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
1.5	3.2	35	8.3	41	8.3	143	1.7	0.1	2.0	1.0	1.0	2.5	7700	0.1	1.9	
2	3.2	37	8.3	43	8.3	145	2.5	0.1	2.3	1.5	1.0	3.0	6270	0.1	1.8	
2.5	3.2	51	8.3	56	8.3	147	2.5	0.2	2.3	1.5	0.9	3.0	5850	0.2	1.9	
3	3.2	55	8.3	60	8.3	147	2.5	0.2	2.4	1.7	0.9	3.4	5220	0.2	1.9	
4	3.2	55	8.3	60	8.3	148	2.7	0.3	2.8	2.5	0.8	4.4	4030	0.3	1.9	
5	3.2	55	8.3	60	8.3	149	2.9	0.4	3.2	3.0	0.7	5.1	3190	0.4	2.0	
6	3.2	55	8.3	60	8.3	151	3.0	0.5	3.2	3.0	0.6	5.1	2710	0.5	2.1	

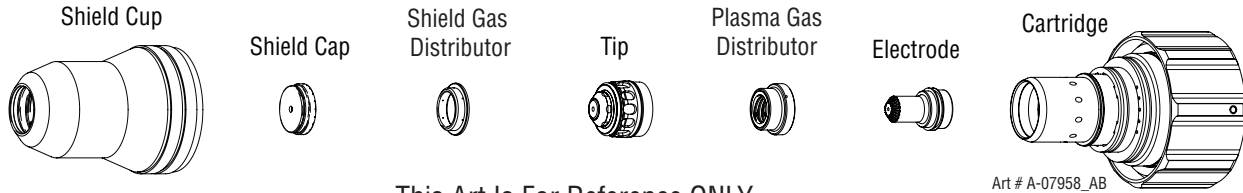
Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
		Ball	(psi) / (Bar)	Ball	(psi) / (Bar)							
	(psi) / (Bar)		(psi) / (Bar)		(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	100	80 / 5.5	148	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

Stainless Steel

70A

Air Plasma / Air Shield

Flow Rates (SLPM / SCFH)	
Air	
Preflow	66 / 139
Cutflow	52 / 110



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1035	21-1274	21-1061	21-1041	21-1079	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
10	-	0.141	84	41	120	94	120	138	0.080	0.3	0.090	0.070	0.3	0.140	120	0.3	0.075
-	3/16	0.188	84	41	120	87	120	144	0.080	0.4	0.090	0.070	0.2	0.140	100	0.4	0.082
-	1/4	0.250	84	41	120	72	120	148	0.130	0.5	0.110	0.110	0.2	0.180	55	0.5	0.085
-	3/8	0.375	84	41	120	72	120	152	0.140	0.6	0.125	0.120	0.2	0.200	40	0.6	0.083
-	1/2	0.500	84	53	120	60	120	160	0.140	0.8	0.190	0.150	0.2	0.280	25	0.8	0.080

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (Air)		Shield (Air)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
3	5.8	41	8.3	97	8.3	135	2.0	0.3	2.3	1.8	0.3	3.6	3300	0.3	1.8	
4	5.8	41	8.3	92	8.3	140	2.0	0.3	2.3	1.8	0.3	3.6	2870	0.3	2.0	
5	5.8	41	8.3	85	8.3	145	2.2	0.4	2.4	1.9	0.2	3.7	2370	0.4	2.1	
6	5.8	41	8.3	75	8.3	147	3.0	0.5	2.7	2.6	0.2	4.3	1650	0.5	2.1	
8	5.8	41	8.3	72	8.3	150	3.4	0.6	3.0	2.9	0.2	4.8	1200	0.6	2.1	
10	5.8	43	8.3	70	8.3	153	3.6	0.6	3.4	3.2	0.2	5.4	960	0.6	2.1	
12	5.8	50	8.3	63	8.3	158	3.6	0.8	4.5	3.6	0.2	6.7	720	0.8	2.0	

Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	135	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

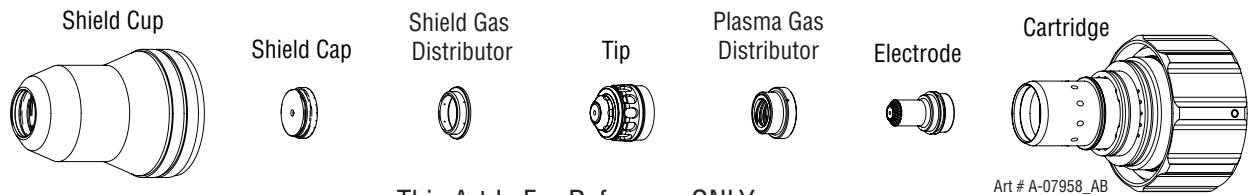
BOLD TYPE indicates maximum piercing parameters.

Stainless Steel

70A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	15 / 31	5 / 19
Cutflow	8 / 17	5 / 19



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1047	21-1274	21-1064	21-1041	21-1084	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
10	-	0.141	45	55	90	5	55	146	0.100	0.3	0.150	0.150	0.2	0.250	120	0.3	0.075
-	3/16	0.188	45	55	90	5	55	150	0.100	0.4	0.150	0.150	0.2	0.250	90	0.4	0.086
-	1/4	0.250	45	55	90	5	55	159	0.150	0.5	0.150	0.150	0.2	0.250	50	0.5	0.095
-	3/8	0.375	45	55	90	5	55	168	0.150	0.7	0.150	0.150	0.2	0.250	35	0.7	0.103

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
3	3.1	55	6.2	5	3.8	144	2.5	0.3	3.8	3.8	0.2	6.4	3420	0.3	1.8
4	3.1	55	6.2	5	3.8	147	2.5	0.3	3.8	3.8	0.2	6.4	2780	0.3	2.0
5	3.1	55	6.2	5	3.8	151	2.7	0.4	3.8	3.8	0.2	6.4	2130	0.4	2.2
6	3.1	55	6.2	5	3.8	157	3.5	0.5	3.8	3.8	0.2	6.4	1490	0.5	2.4
8	3.1	55	6.2	5	3.8	164	3.8	0.6	3.8	3.8	0.2	6.4	1070	0.6	2.5
10	3.1	55	6.2	5	3.8	169	3.8	0.7	3.8	3.8	0.2	6.4	830	0.7	2.6

Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	150	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

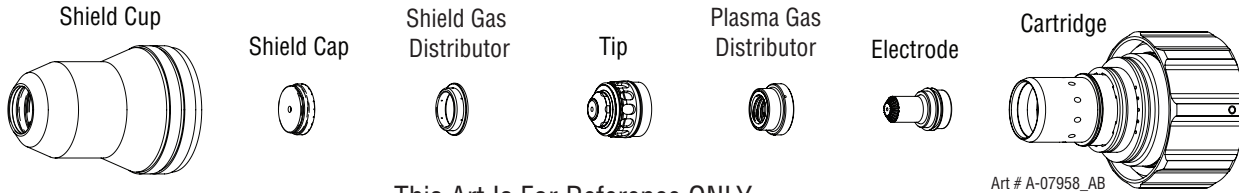
* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

Aluminum 70A Air Plasma / Air Shield

Flow Rates (SLPM / SCFH)	
Air	
Preflow	66 / 139
Cutflow	52 / 110



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1035	21-1274	21-1061	21-1041	21-1079	21-1020

Material Thickness			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	-	0.079	84	42	120	70	120	153	0.060	0.0	0.090	0.070	0.4	0.140	300	0.0	0.058
-	-	0.097	84	42	120	70	120	160	0.080	0.1	0.090	0.070	0.3	0.140	200	0.1	0.062
-	-	0.120	84	42	120	70	120	161	0.090	0.1	0.090	0.070	0.3	0.140	175	0.1	0.065
-	3/16	0.188	84	42	120	70	120	162	0.120	0.1	0.090	0.070	0.3	0.140	100	0.1	0.072
-	1/4	0.250	84	42	120	70	120	166	0.140	0.2	0.120	0.110	0.2	0.180	70	0.2	0.073
-	3/8	0.375	84	42	120	70	120	168	0.140	0.3	0.120	0.110	0.2	0.180	60	0.3	0.078

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (Air)		Shield (Air)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
2	5.8	42	8.3	70	8.3	153	1.5	-0.0	2.3	1.8	0.4	3.6	7660	-0.0	1.5	
2.5	5.8	42	8.3	70	8.3	160	2.0	0.1	2.3	1.8	0.3	3.6	5040	0.1	1.6	
3	5.8	42	8.3	70	8.3	160	2.3	0.1	2.3	1.8	0.3	3.6	4490	0.1	1.6	
4	5.8	42	8.3	70	8.3	161	2.7	0.1	2.3	1.8	0.3	3.6	3380	0.1	1.7	
5	5.8	42	8.3	70	8.3	163	3.1	0.1	2.4	1.9	0.3	3.7	2430	0.1	1.8	
6	5.8	42	8.3	70	8.3	165	3.4	0.2	2.9	2.6	0.2	4.3	1950	0.2	1.8	
8	5.8	42	8.3	70	8.3	167	3.6	0.3	3.0	2.8	0.2	4.6	1650	0.3	1.9	
10	5.8	42	8.3	70	8.3	168	3.6	0.3	3.0	2.8	0.2	4.6	1490	0.3	2.0	

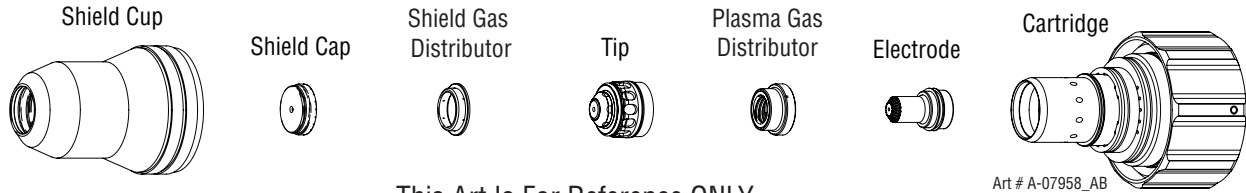
Marking 16A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	135	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

Aluminum

70A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	15 / 31	5 / 19
Cutflow	8 / 17	5 / 19



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1047	21-1274	21-1064	21-1041	21-1084	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	-	0.064	45	55	90	5	55	155	0.100	0.0	0.150	0.150	0.2	0.250	300	0.0	0.057
-	-	0.079	45	55	90	5	55	148	0.100	0.0	0.150	0.150	0.2	0.250	240	0.0	0.068
-	-	0.097	45	55	90	5	55	150	0.150	0.1	0.150	0.150	0.2	0.250	200	0.1	0.095
-	-	0.120	45	55	90	5	55	150	0.150	0.2	0.150	0.150	0.2	0.250	180	0.2	0.095
-	3/16	0.188	45	55	90	5	55	150	0.150	0.3	0.150	0.150	0.2	0.250	120	0.3	0.095
-	1/4	0.250	45	55	90	5	55	158	0.150	0.3	0.150	0.150	0.2	0.250	70	0.3	0.097
-	3/8	0.375	45	55	90	5	55	162	0.150	0.5	0.150	0.150	0.2	0.250	35	0.5	0.100

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (N ₂)		Shield (H ₂ O)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
2	3.1	55	6.2	5	3.8	148	2.5	0.0	3.8	3.8	0.2	6.4	6120	0.0	1.7	
3	3.1	55	6.2	5	3.8	150	3.8	0.1	3.8	3.8	0.2	6.4	4610	0.1	2.4	
4	3.1	55	6.2	5	3.8	150	3.8	0.2	3.8	3.8	0.2	6.4	3720	0.2	2.4	
5	3.1	55	6.2	5	3.8	151	3.8	0.3	3.8	3.8	0.2	6.4	2860	0.3	2.4	
6	3.1	55	6.2	5	3.8	156	3.8	0.3	3.8	3.8	0.2	6.4	2060	0.3	2.5	
7	3.1	55	6.2	5	3.8	159	3.8	0.3	3.8	3.8	0.2	6.4	1600	0.3	2.5	
8	3.1	55	6.2	5	3.8	160	3.8	0.4	3.8	3.8	0.2	6.4	1320	0.4	2.5	

Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
	Plasma (N ₂)	Shield (N ₂)										
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	150	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

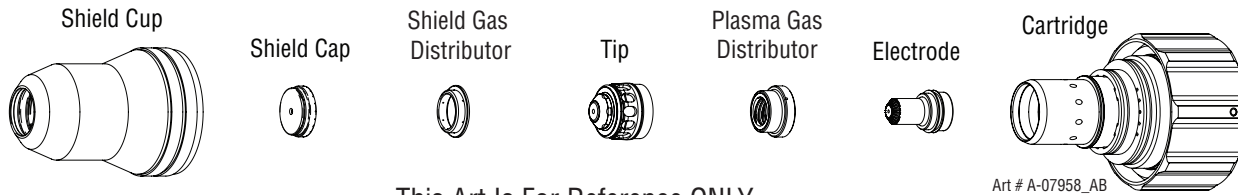
Note 2: Water source used for shield must be demineralized.

Mild Steel

100A

O₂ Plasma / Air Shield

	Flow Rates (SLPM / SCFH)	
	O ₂	Air
	Preflow - / -	38 / 81
Cutflow	16 / 35	27 / 58



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1027	21-1272	21-1153	21-1041	21-1171	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
10	-	0.135	40	55	120	80	120	138	0.070	0.2	0.125	0.120	0.6	0.200	280	0.2	0.065
-	3/16	0.188	40	55	120	80	120	140	0.090	0.2	0.125	0.120	0.6	0.200	190	0.2	0.070
-	1/4	0.250	40	55	120	80	120	141	0.090	0.3	0.125	0.120	0.5	0.200	145	0.3	0.078
-	3/8	0.375	40	55	120	80	120	143	0.110	0.4	0.150	0.150	0.4	0.250	90	0.4	0.085
-	1/2	0.500	40	55	120	80	120	147	0.120	0.6	0.200	0.150	0.4	0.300	60	0.6	0.097
-	5/8	0.625	40	55	120	80	120	148	0.120	0.8	0.250	0.200	0.4	0.350	50	0.8	0.100
-	3/4	0.750	40	55	120	80	120	157	0.150	3.5	Edge Start		0.4	Edge	25	2.0	0.125

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
4	2.8	55	8.3	80	8.3	139	2.0	0.2	3.2	3.0	0.6	5.1	6140	0.2	1.7
5	2.8	55	8.3	80	8.3	140	2.3	0.2	3.2	3.0	0.6	5.1	4660	0.2	1.8
6	2.8	55	8.3	80	8.3	141	2.3	0.3	3.2	3.0	0.5	5.1	3940	0.3	1.9
8	2.8	55	8.3	80	8.3	142	2.6	0.4	3.5	3.4	0.4	5.7	2960	0.4	2.1
10	2.8	55	8.3	80	8.3	144	2.8	0.4	4.0	3.8	0.4	6.5	2170	0.4	2.2
12	2.8	55	8.3	80	8.3	146	3.0	0.6	4.8	3.8	0.4	7.3	1690	0.6	2.4
15	2.8	55	8.3	80	8.3	148	3.0	0.7	6.0	4.7	0.4	8.5	1340	0.7	2.5
20	2.8	55	8.3	80	8.3	157	3.8	4.3	Edge Start		0.4	Edge	640	2.4	3.2

Marking 17A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	100	80 / 5.5	144	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

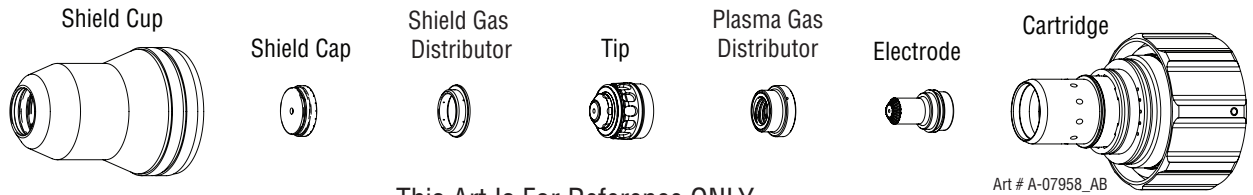
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

100A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
H35		N ₂
Preflow	- / -	62 / 132
Cutflow	24 / 51	51 / 107



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1036	21-1274	21-1062	21-1041	21-1080	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/4	0.250	40	50	120	97	120	148	0.145	0.3	0.150	0.150	0.3	0.250	72	0.3	0.093
-	3/8	0.375	40	55	120	97	120	152	0.130	0.3	0.200	0.150	0.3	0.300	55	0.3	0.090
-	1/2	0.500	40	55	120	97	120	155	0.130	0.5	0.250	0.200	0.2	0.350	42	0.5	0.095
-	5/8	0.625	40	62	120	97	120	157	0.130	0.6	0.350	0.300	0.2	0.450	25	0.6	0.100

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
6	2.8	49	8.3	97	8.3	148	3.7	0.3	3.7	3.8	0.3	6.2	1880	0.3	2.4
8	2.8	53	8.3	97	8.3	150	3.5	0.3	4.5	3.8	0.3	7.0	1600	0.3	2.3
10	2.8	55	8.3	97	8.3	152	3.3	0.3	5.3	4.0	0.3	7.8	1350	0.3	2.3
12	2.8	55	8.3	97	8.3	154	3.3	0.5	6.1	4.8	0.2	8.6	1140	0.5	2.4
15	2.8	60	8.3	97	8.3	156	3.3	0.6	8.2	6.9	0.2	10.7	750	0.6	2.5

Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	125	0.120 / 3.0	0.120 / 3.0	0	0.5	300 / 7620	

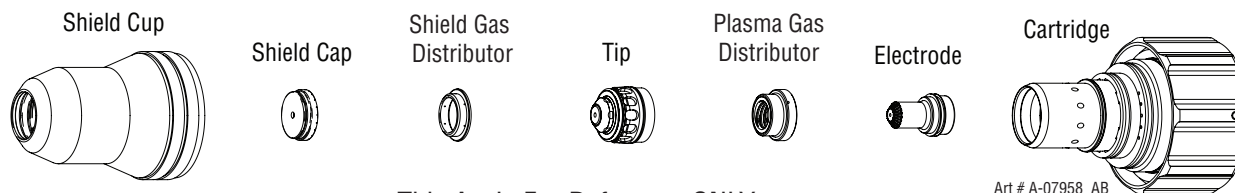
BOLD TYPE indicates maximum piercing parameters.

Stainless Steel

100A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	17 / 35	7 / 26
	14 / 29	7 / 26



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1036	21-1274	21-1053	21-1041	21-1089	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/16	0.188	45	60	90	7	55	148	0.100	0.1	0.200	0.150	0.2	0.300	140	0.1	0.091
-	1/4	0.250	45	60	90	7	55	158	0.100	0.1	0.200	0.150	0.2	0.300	95	0.1	0.091
-	3/8	0.375	45	60	90	7	55	168	0.150	0.2	0.250	0.200	0.2	0.350	65	0.2	0.100
-	1/2	0.500	45	60	90	7	55	168	0.150	0.4	0.250	0.200	0.2	0.350	50	0.4	0.102

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
5	3.1	60	6.2	7	3.8	149	2.5	0.1	5.1	3.8	0.2	7.6	3390	0.1	2.3
6	3.1	60	6.2	7	3.8	156	2.5	0.1	5.1	3.8	0.2	7.6	2670	0.1	2.3
8	3.1	60	6.2	7	3.8	163	3.2	0.2	5.7	4.5	0.2	8.3	2020	0.2	2.4
10	3.1	60	6.2	7	3.8	168	3.8	0.2	6.4	5.1	0.2	8.9	1590	0.2	2.5
12	3.1	60	6.2	7	3.8	168	3.8	0.4	6.4	5.1	0.2	8.9	1350	0.4	2.6

Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
		(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	150	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

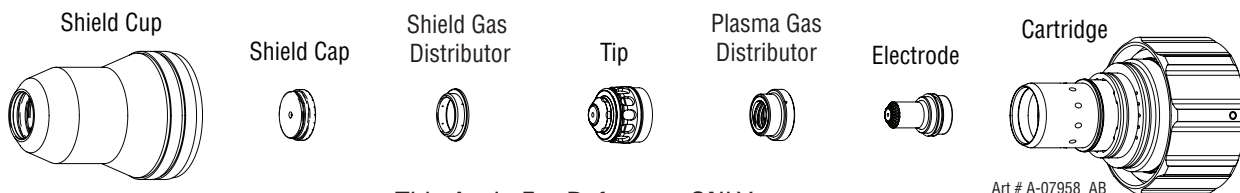
Note 2: Water source used for shield must be demineralized.

Aluminum

100A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	62 / 132
Cutflow	24 / 51	51 / 107



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1036	21-1274	21-1062	21-1041	21-1080	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	40	67	120	62	120	152	0.154	0.2	0.250	0.200	0.4	0.350	60	0.2	0.105
-	1/2	0.500	40	67	120	62	120	158	0.150	0.2	0.250	0.200	0.4	0.350	50	0.2	0.110
-	5/8	0.625	40	67	120	62	120	160	0.150	0.5	0.250	0.200	0.2	0.350	35	0.5	0.110

		GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (H35)		Shield (N ₂)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
10	2.8	67	8.3	62	8.3	153	3.9	0.2	6.4	5.1	0.4	8.9	1490	0.2	2.7	
12	2.8	67	8.3	62	8.3	157	3.8	0.2	6.4	5.1	0.4	8.9	1330	0.2	2.8	
15	2.8	67	8.3	62	8.3	159	3.8	0.4	6.4	5.1	0.3	8.9	990	0.4	2.8	

Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	125	0.120 / 3.0	0.120 / 3.0	0	0.7	300 / 7620	

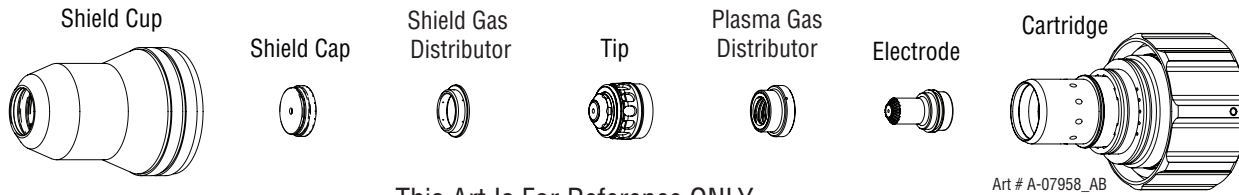
BOLD TYPE indicates maximum piercing parameters.

Aluminum

100A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	17 / 35	7 / 26
	14 / 29	7 / 26



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1036	21-1274	21-1053	21-1041	21-1089	21-1020

Material Thickness			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/16	0.188	45	60	90	7	55	158	0.150	0.1	0.200	0.150	0.2	0.300	130	0.1	0.095
-	1/4	0.250	45	60	90	7	55	160	0.150	0.1	0.200	0.150	0.2	0.300	90	0.1	0.100
-	3/8	0.375	45	60	90	7	55	161	0.150	0.2	0.200	0.150	0.2	0.300	70	0.2	0.100
-	1/2	0.500	45	60	90	7	55	171	0.150	0.4	0.200	0.150	0.2	0.300	40	0.4	0.100
-	5/8	0.625	45	60	90	7	55	175	0.180	0.5	0.250	0.200	0.2	0.350	35	0.5	0.105

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (N ₂)		Shield (H ₂ O)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
5	3.1	60	6.2	7	3.8	158	3.8	0.1	5.1	3.8	0.2	7.6	3150	0.1	2.4	
6	3.1	60	6.2	7	3.8	160	3.8	0.1	5.1	3.8	0.2	7.6	2510	0.1	2.5	
8	3.1	60	6.2	7	3.8	161	3.8	0.2	5.1	3.8	0.2	7.6	2020	0.2	2.5	
10	3.1	60	6.2	7	3.8	162	3.8	0.2	5.1	3.8	0.2	7.6	1660	0.2	2.5	
12	3.1	60	6.2	7	3.8	169	3.8	0.4	5.1	3.8	0.2	7.6	1180	0.4	2.5	
15	3.1	60	6.2	7	3.8	174	4.4	0.5	6.0	4.7	0.2	8.5	920	0.5	2.6	

Marking 18A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	50	40 / 2.8	75	80 / 5.5	150	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

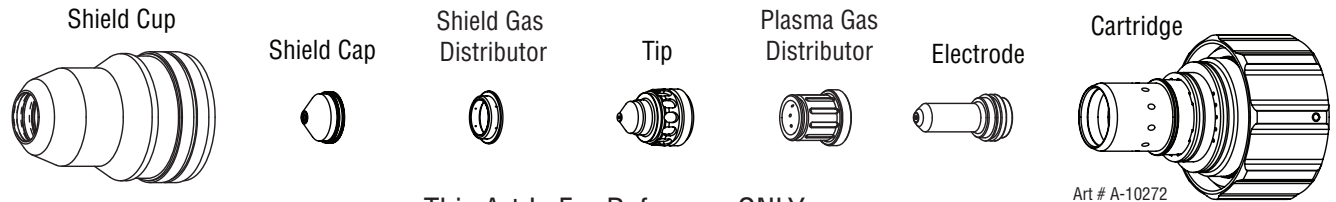
8.02 Robotic and Bevel Cutting Up To 100 Amp

Mild Steel

15A ROBOTIC COMPATIBLE

O₂ Plasma / O₂ Shield

	Flow Rates (SLPM / SCFH)	
	O ₂	Air
	Preflow	Cutflow
Preflow	5 / 10	12 / 25
Cutflow	8 / 18	0 / 0



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1405	21-1404	21-1402	21-1403	21-1400	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (O ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
26	-	0.024	70	35	100	20	40	108	0.030	0.0	0.080	0.050	1.5	0.100	185	0.0	0.042
26	-	0.024	70	35	100	20	40	117	0.030	0.0	0.080	0.050	1.5	0.100	95	0.0	0.050
20	-	0.036	70	35	100	20	40	110	0.040	0.0	0.080	0.050	1.5	0.100	150	0.0	0.043
20	-	0.036	70	35	100	20	40	120	0.040	0.0	0.080	0.050	1.5	0.100	80	0.0	0.052
18	-	0.048	70	35	100	20	40	114	0.040	0.1	0.080	0.050	1.5	0.100	110	0.1	0.049
18	-	0.048	70	35	100	20	40	125	0.040	0.1	0.080	0.050	1.5	0.100	60	0.1	0.057
16	-	0.060	70	35	100	20	40	119	0.060	0.2	0.080	0.050	1.5	0.100	75	0.2	0.056
14	-	0.075	70	35	100	20	40	126	0.080	0.2	0.080	0.050	1.5	0.100	55	0.2	0.070

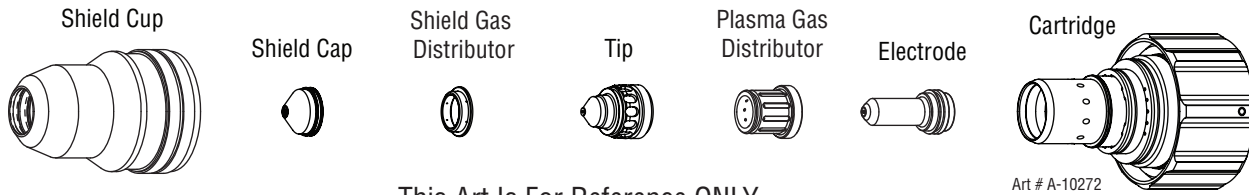
	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (O ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
0.5	4.8	35	6.9	20	2.8	108	0.8	0.0	2.0	1.3	1.5	2.5	5100	0.0	1.1
0.5	4.8	35	6.9	20	2.8	116	0.8	0.0	2.0	1.3	1.5	2.5	2500	0.0	1.3
1	4.8	35	6.9	20	2.8	111	1.0	0.0	2.0	1.3	1.5	2.5	3500	0.0	1.1
1	4.8	35	6.9	20	2.8	122	1.0	0.0	2.0	1.3	1.5	2.5	1900	0.0	1.3
1.5	4.8	35	6.9	20	2.8	119	1.5	0.2	2.0	1.3	1.5	2.5	1900	0.2	1.4
2	4.8	35	6.9	20	2.8	129	2.0	0.2	2.0	1.3	1.5	2.5	1200	0.2	1.9

Note 1: Recommended with DFC-3000 automated gas console to improve cut quality at the start.

Note 2: Recommended for flat plate, bevel and robotic cutting applications.

Mild Steel
20-30A ROBOTIC COMPATIBLE
O₂ Plasma / O₂ Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	5 / 10	16 / 34
Cutflow	15 / 32	0 / 0



This Art Is For Reference ONLY

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1405	21-1404	21-1401	21-1403	21-1400	21-1020

				GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Cut Current	Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
					Plasma (O ₂)		Shield (O ₂)											
	ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
20A	16	-	0.060	70	35	100	20	40	114	0.080	0.0	0.100	0.050	1.5	0.150	125	1.0	0.054
20A	14	-	0.075	70	35	100	20	40	114	0.080	0.0	0.100	0.050	1.5	0.150	100	0.0	0.058
30A	13	-	0.090	70	35	100	20	40	108	0.060	0.1	0.100	0.050	1.4	0.150	100	0.1	0.065
30A	12	-	0.105	70	35	100	20	40	110	0.060	0.2	0.100	0.050	1.3	0.150	80	0.2	0.066
30A	10	-	0.135	70	35	100	20	40	118	0.090	0.2	0.125	0.075	1.3	0.200	45	0.2	0.077
30A	-	16/85	0.188	70	35	100	20	40	125	0.120	0.4	0.150	0.100	1.1	0.250	35	0.4	0.080
30A	-	1/4	0.250	70	35	100	20	40	128	0.150	0.5	0.150	0.100	1.0	0.250	25	0.5	0.090

		GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Cut Current	Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (O ₂)											
	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
20A	1.5	4.8	35	6.9	20	2.8	114	2.0	0.0	2.5	1.3	1.5	3.8	3200	0.0	1.4
20A	2	4.8	35	6.9	20	2.8	114	2.0	0.1	2.5	1.3	1.4	3.8	2300	0.1	1.5
30A	2	4.8	35	6.9	20	2.8	107	1.5	0.0	2.5	1.3	1.5	3.8	2800	0.0	1.6
30A	2.5	4.8	35	6.9	20	2.8	109	1.5	0.1	2.5	1.3	1.4	3.8	2200	0.1	1.7
30A	3	4.8	35	6.9	20	2.8	114	2.0	0.2	2.5	1.3	1.3	3.8	1600	0.2	1.8
30A	4	4.8	35	6.9	20	2.8	121	2.5	0.3	3.2	1.9	1.2	5.1	1000	0.3	2.0
30A	5	4.8	35	6.9	20	2.8	125	3.0	0.4	3.8	2.5	1.1	6.4	860	0.4	2.1
30A	6	4.8	35	6.9	20	2.8	127	3.8	0.5	3.8	2.5	1.0	6.4	690	0.5	2.2

Note 1: Recommended with DFC-3000 automated gas console to improve cut quality at the start.

Note 2: Recommended for flat plate, bevel and robotic cutting applications.

Mild Steel
100A Bevel Cut
O₂ Plasma / Air Shield

	Flow Rates (SLPM / SCFH)	
	O ₂	Air
	- / -	38 / 81
Preflow	- / -	38 / 81
Cutflow	16 / 35	27 / 58



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1127	21-1278	21-1154	21-1041	21-1172	21-1020

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.135	0.080	40	55	120	35	120	0.070 - 0.250	0.2	0.125	0.120	0.6	0.200	280	0.2	0.065
0.188	0.080	40	55	120	35	120	0.090 - 0.250	0.2	0.125	0.120	0.6	0.200	190	0.2	0.070
0.250	0.080	40	55	120	35	120	0.100 - 0.250	0.3	0.125	0.120	0.5	0.200	150	0.3	0.078
0.375	0.080	40	55	120	35	120	0.110 - 0.250	0.4	0.150	0.150	0.4	0.250	95	0.4	0.085
0.500	0.080	40	55	120	40	120	0.120 - 0.250	0.6	0.200	0.150	0.4	0.300	68	0.6	0.097
0.625	0.080	40	55	120	40	120	0.120 - 0.250	0.8	0.250	0.200	0.4	0.350	55	0.8	0.100
0.750	0.080	40	55	120	40	120	0.150 - 0.250	3.5	Edge Start		0.4	Edge	25	2.0	0.125

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
4	2.0	2.8	55	8.3	35	8.3	2.0 - 6.4	0.2	3.2	3.0	0.6	5.1	6140	0.2	1.7
5	2.0	2.8	55	8.3	35	8.3	2.3 - 6.4	0.2	3.2	3.0	0.6	5.1	4680	0.2	1.8
6	2.0	2.8	55	8.3	35	8.3	2.5 - 6.4	0.3	3.2	3.0	0.5	5.1	4040	0.3	1.9
8	2.0	2.8	55	8.3	35	8.3	2.7 - 6.4	0.4	3.5	3.4	0.4	5.7	3080	0.4	2.1
10	2.0	2.8	55	8.3	36	8.3	2.8 - 6.4	0.4	4.0	3.8	0.4	6.5	2310	0.4	2.2
12	2.0	2.8	55	8.3	39	8.3	3.0 - 6.4	0.6	4.8	3.8	0.4	7.3	1880	0.6	2.4
15	2.0	2.8	55	8.3	40	8.3	3.0 - 6.4	0.7	6.0	4.7	0.4	8.5	1490	0.7	2.5
20	2.0	2.8	55	8.3	40	8.3	4.0 - 6.4	4.3	Edge Start		0.4	Edge	410	2.4	3.4

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

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Chart is for Customer Settings
Make Copies as Desired

Flow Rates (SLPM / SCFH)		
O ₂		Air
Preflow		
Cutflow		

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O₂)		Shield (Air)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)

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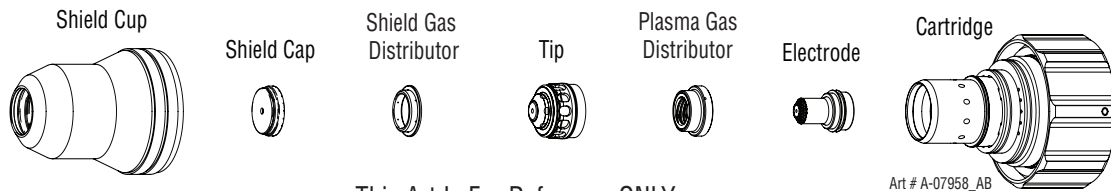
8.03 Standard Cutting 150 - 200 Amp

Mild Steel

150A

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	100 / 213
Cutflow	59 / 126	81 / 171



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	≤ 3/4" / 20 mm 21-1028 > 3/4" / 20 mm 21-1275	21-1273	21-1054	21-1042	21-1072	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	80	62	120	45	120	147	0.120	0.4	0.200	0.150	0.5	0.300	120	0.4	0.115
-	1/2	0.500	80	62	120	45	120	150	0.120	0.9	0.200	0.150	0.5	0.300	90	0.6	0.110
-	5/8	0.625	80	62	120	45	120	155	0.130	1.0	0.250	0.200	0.5	0.350	75	0.6	0.116
-	3/4	0.750	80	62	120	45	120	162	0.140	1.3	0.250	0.200	0.5	0.350	50	0.8	0.141
-	7/8	0.875	80	62	120	62	120	165	0.140	1.8	0.250	0.200	0.5	0.350	30	0.8	0.182
-	1	1.000	80	62	120	62	120	172	0.160	2.2	0.250	0.200	0.5	0.350	25	1.0	0.180
-	1 1/4	1.250	80	62	120	62	120	172	0.160	1.0	Edge Start		0.5	Edge	25	1.0	0.170
-	1 1/2	1.500	80	62	120	62	120	175	0.160	1.0	Edge Start		0.5	Edge	15	1.0	0.190
-	2	2.000	80	62	120	62	120	184	0.160	1.0	Edge Start		0.5	Edge	9	1.0	0.195

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	5.5	62	8.3	45	8.3	147	3.0	0.5	5.1	3.8	0.5	7.6	2930	0.4	2.9
12	5.5	62	8.3	45	8.3	149	3.0	0.8	5.1	3.8	0.5	7.6	2450	0.6	2.8
15	5.5	62	8.3	45	8.3	154	3.2	1.0	6.0	4.7	0.5	8.5	2010	0.6	2.9
20	5.5	62	8.3	50	8.3	163	3.6	1.4	6.4	5.1	0.5	8.9	1120	0.8	3.9
25	5.5	62	8.3	62	8.3	171	4.0	2.1	6.4	5.1	0.5	8.9	650	1.0	4.6
30	5.5	62	8.3	62	8.3	171	4.1	1.0	Edge Start		0.5	Edge	710	1.0	4.2
35	5.5	62	8.3	62	8.3	174	4.1	1.0	Edge Start		0.5	Edge	510	1.0	4.6
40	5.5	62	8.3	62	8.3	176	4.1	1.0	Edge Start		0.5	Edge	360	1.0	4.8
50	5.5	62	8.3	62	8.3	183	4.1	1.0	Edge Start		0.5	Edge	240	1.0	4.9

Marking 20A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
		(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	
	20 / 1.4	60	60 / 4.1	120	80 / 5.5	142	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

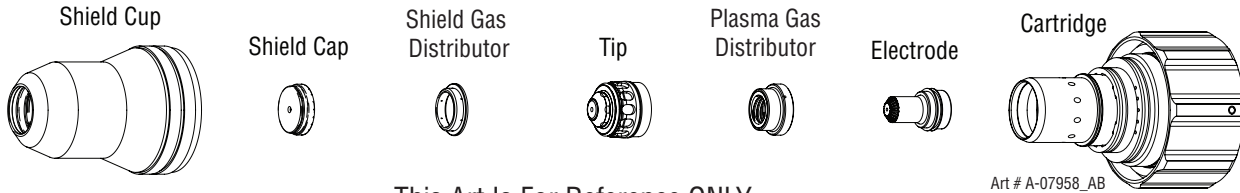
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

150A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	55 / 117
Cutflow	16 / 33	37 / 78



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1037	21-1278	21-1063	21-1041	21-1081	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	84	57	120	85	120	153	0.300	0.5	0.250	0.200	0.4	0.350	50	0.2	0.110
-	5/8	0.625	84	57	120	85	120	155	0.200	0.9	0.250	0.200	0.2	0.350	40	0.4	0.118
-	3/4	0.750	84	57	120	85	120	157	0.225	1.4	0.300	0.250	0.2	0.400	30	0.6	0.128
-	7/8	0.875	84	57	120	85	120	161	0.238	2.4	0.325	0.250	0.2	0.425	25	1.2	0.131
-	1	1.000	84	57	120	85	120	165	0.250	3.6	0.350	0.300	0.2	0.450	20	1.8	0.133

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (H35)		Shield (N ₂)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
12	5.8	57	8.3	85	8.3	153	8.2	0.4	6.4	5.1	0.4	8.9	1330	0.2	2.7	
15	5.8	57	8.3	85	8.3	154	5.8	0.8	6.4	5.1	0.3	8.9	1090	0.3	2.9	
20	5.8	57	8.3	85	8.3	158	5.8	1.7	7.8	6.4	0.2	10.4	720	0.8	3.3	
25	5.8	57	8.3	85	8.3	164	6.3	3.4	8.8	7.5	0.2	11.4	520	1.7	3.4	

Marking 19A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	60	60 / 4.1	75	80 / 5.5	130	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

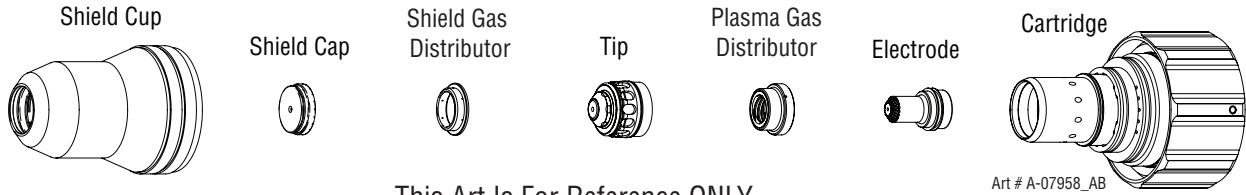
BOLD TYPE indicates maximum piercing parameters.

Stainless Steel

150A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	24 / 50	8 / 30
	16 / 35	8 / 30



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1048	21-1278	21-1092	21-1041	21-1081	21-1020

Material Thickness			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/4	0.250	70	60	90	8	55	135	0.100	0.3	0.150	0.150	0.2	0.250	110	0.3	0.104
-	3/8	0.375	70	60	90	8	55	139	0.100	0.3	0.250	0.150	0.2	0.350	70	0.3	0.107
-	1/2	0.500	70	60	90	8	55	149	0.150	0.8	0.250	0.150	0.2	0.350	60	0.5	0.111
-	5/8	0.625	70	60	90	8	55	159	0.180	1.0	0.250	0.150	0.2	0.350	45	0.5	0.128
-	3/4	0.750	70	60	90	4	55	159	0.180	1.5	0.250	0.150	0.2	0.350	40	0.9	0.130

		GCM-2010				SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
8	4.8	60	6.2	8	3.8	137	2.5	0.3	5.1	3.8	0.2	7.7	2270	0.3	2.7
10	4.8	60	6.2	8	3.8	140	2.7	0.4	6.4	3.8	0.2	8.9	1740	0.3	2.7
12	4.8	60	6.2	8	3.8	147	3.5	0.7	6.4	3.8	0.2	8.9	1580	0.5	2.8
15	4.8	60	6.2	8	3.8	156	4.4	0.9	6.4	3.8	0.2	8.9	1250	0.5	3.1
20	4.8	60	6.2	4	3.8	159	4.6	1.6	6.4	3.8	0.2	8.9	980	1.0	3.3

Marking 17A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm / min)	
	20 / 1.4	60	60 / 4.1	75	80 / 5.5	130	0.120 / 3.0	0.120 / 3.0	0	0.5	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

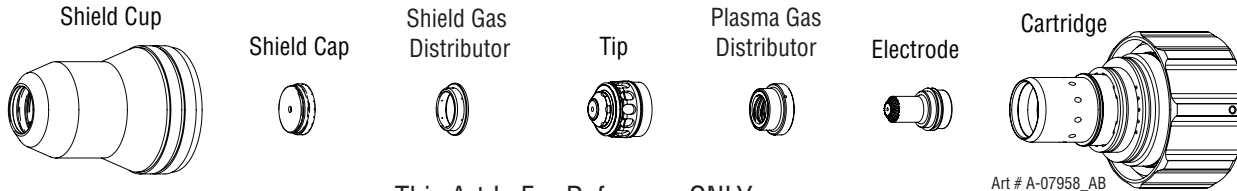
Note 2: Water source used for shield must be demineralized.

Aluminum

150A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	54 / 114
Cutflow	34 / 72	26 / 56



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1037	21-1278	21-1063	21-1041	21-1081	21-1020

			GCM-2010						SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
				Plasma (H35)		Shield (N ₂)												
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)	
-	1/2	0.500	70	80	120	60	120	167	0.400	0.4	0.350	0.300	0.2	0.450	75	0.4	0.120	
-	5/8	0.625	70	80	120	60	120	165	0.300	0.9	0.250	0.200	0.2	0.350	40	0.5	0.129	
-	3/4	0.750	70	80	120	60	120	173	0.300	1.5	0.300	0.250	0.2	0.400	35	0.8	0.139	
-	7/8	0.875	70	80	120	60	120	174	0.300	2.2	0.325	0.250	0.2	0.425	30	1.3	0.138	
-	1	1.000	70	80	120	60	120	175	0.300	3.0	0.350	0.300	0.2	0.450	25	1.8	0.137	

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	4.8	80	8.3	60	8.3	167	10.7	0.3	9.4	8.2	0.2	12.0	2100	0.4	3.0
15	4.8	80	8.3	60	8.3	166	8.3	0.8	7.0	5.8	0.2	9.6	1260	0.5	3.2
20	4.8	80	8.3	60	8.3	173	7.6	1.7	7.8	6.4	0.2	10.4	850	0.9	3.5
25	4.8	80	8.3	60	8.3	175	7.6	2.9	8.8	7.5	0.2	11.4	650	1.7	3.5

Marking 19A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	60	60 / 4.1	75	80 / 5.5	130	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

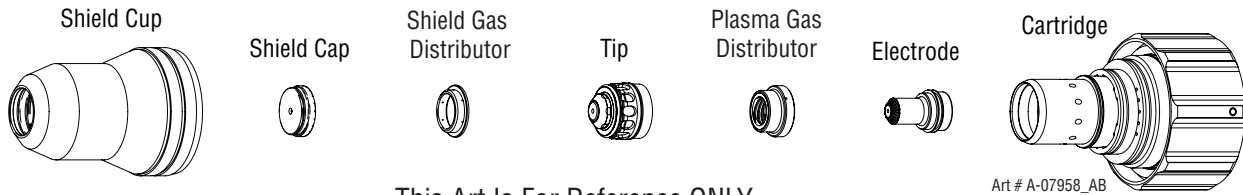
BOLD TYPE indicates maximum piercing parameters.

Aluminum

150A

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	24 / 51	8 / 30
Cutflow	16 / 35	8 / 30



This Art Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1016	21-1048	21-1278	21-1092	21-1041	21-1081	21-1020

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/16	0.188	70	60	90	8	55	130	0.100	0.2	0.250	0.200	0.2	0.350	150	0.2	0.107
-	1/4	0.250	70	60	90	8	55	133	0.120	0.2	0.250	0.200	0.2	0.350	120	0.2	0.108
-	3/8	0.375	70	60	90	8	55	140	0.120	0.2	0.250	0.200	0.2	0.350	100	0.2	0.116
-	1/2	0.500	70	60	90	8	55	152	0.200	0.3	0.250	0.200	0.2	0.350	75	0.3	0.126
-	5/8	0.625	70	60	90	8	55	155	0.200	0.7	0.250	0.200	0.2	0.350	50	0.4	0.142
-	3/4	0.750	70	60	90	8	55	165	0.250	1.0	0.250	0.200	0.2	0.350	35	0.5	0.141
-	7/8	0.875	70	60	90	8	55	172	0.275	1.7	0.250	0.200	0.2	0.350	28	0.8	0.148
-	1	1.000	70	60	90	8	55	178	0.300	2.5	0.250	0.200	0.2	0.350	20	1.0	0.155

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
5	4.8	60	6.2	8	3.8	130	2.6	0.2	6.4	5.1	0.2	8.9	3700	0.2	2.7
6	4.8	60	6.2	8	3.8	132	2.9	0.2	6.4	5.1	0.2	8.9	3220	0.2	2.7
8	4.8	60	6.2	8	3.8	137	3.0	0.2	6.4	5.1	0.2	8.9	2780	0.2	2.8
10	4.8	60	6.2	8	3.8	142	3.4	0.2	6.4	5.1	0.2	8.9	2450	0.2	3.0
12	4.8	60	6.2	8	3.8	149	4.6	0.3	6.4	5.1	0.2	8.9	2050	0.3	3.1
15	4.8	60	6.2	8	3.8	154	5.1	0.6	6.4	5.1	0.2	8.9	1450	0.4	3.5
20	4.8	60	6.2	8	3.8	167	6.5	1.2	6.4	5.1	0.2	8.9	830	0.6	3.6
25	4.8	60	6.2	8	3.8	177	7.5	2.4	6.4	5.1	0.2	8.9	530	1.0	3.9

Marking 17A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	20 / 1.4	60	60 / 4.1	75	80 / 5.5	130	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters.

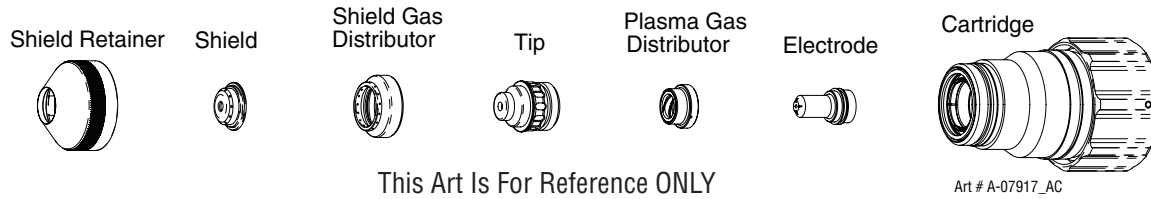
* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

Mild Steel 200A O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	162 / 343
Cutflow	42 / 89	133 / 281



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1014	21-1030	21-1285	21-1055	21-1042	21-1093	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/16	0.188	15	100	100	NA	100	151	0.130	0.2	0.200	0.150	0.5	0.300	250	0.2	0.142
-	1/4	0.250	15	100	100	NA	100	151	0.130	0.2	0.200	0.150	0.5	0.300	200	0.2	0.148
-	3/8	0.375	15	100	100	NA	100	154	0.150	0.3	0.250	0.200	0.5	0.350	140	0.3	0.162
-	1/2	0.500	15	100	100	NA	100	159	0.170	0.7	0.250	0.200	0.5	0.350	115	0.5	0.167
-	5/8	0.625	15	100	100	NA	100	161	0.200	0.9	0.250	0.200	0.5	0.350	80	0.6	0.186
-	3/4	0.750	15	100	100	NA	100	163	0.200	1.3	0.300	0.250	0.5	0.400	65	0.8	0.186
-	7/8	0.875	15	100	100	NA	100	166	0.200	1.6	0.300	0.250	0.5	0.400	57	1.0	0.185
-	1	1.000	15	100	100	NA	100	167	0.200	1.9	0.300	0.250	0.5	0.400	48	1.2	0.193
-	1 1/4	1.250	15	100	100	NA	100	170	0.200	3.2	0.325	0.250	0.5	0.425	30	2.0	0.196
-	1 1/2	1.500	15	100	100	NA	100	185	0.200	5.8	0.350	0.300	0.5	0.450	20	4.0	0.201
-	1 3/4	1.750	15	100	100	NA	100	189	0.200	1.0	Edge Start		0.5	Edge	15	1.0	0.203
-	2	2.000	15	100	100	NA	100	192	0.200	1.0	Edge Start		0.5	Edge	10	1.0	0.204
-	2 1/2	2.500	15	100	100	NA	100	192	0.200	1.0	Edge Start		0.5	Edge	8	1.0	0.210

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
5	1.0	100	6.9	NA	6.9	151	3.3	0.2	5.1	3.8	0.5	7.6	6170	0.2	3.6
6	1.0	100	6.9	NA	6.9	151	3.3	0.2	5.1	3.8	0.5	7.6	5360	0.2	3.7
8	1.0	100	6.9	NA	6.9	153	3.6	0.3	5.7	4.5	0.5	8.3	4290	0.3	3.9
10	1.0	100	6.9	NA	6.9	155	3.9	0.4	6.4	5.1	0.5	8.9	3460	0.3	4.1
12	1.0	100	6.9	NA	6.9	158	4.2	0.6	6.4	5.1	0.5	8.9	3060	0.5	4.2
15	1.0	100	6.9	NA	6.9	160	4.9	0.8	6.4	5.1	0.5	8.9	2280	0.6	4.6
20	1.0	100	6.9	NA	6.9	164	5.1	1.4	7.6	6.4	0.5	10.2	1590	0.9	4.7
25	1.0	100	6.9	NA	6.9	167	5.1	1.9	7.6	6.4	0.5	10.2	1250	1.2	4.9
30	1.0	100	6.9	NA	6.9	169	5.1	2.8	8.1	6.4	0.5	10.6	890	1.8	5.0
35	1.0	100	6.9	NA	6.9	178	5.1	4.5	8.6	7.0	0.5	11.1	630	3.0	5.0
40	1.0	100	6.9	NA	6.9	186	5.1	1.0	Edge Start		0.5	Edge	470	1.0	5.1
50	1.0	100	6.9	NA	6.9	192	5.1	1.0	Edge Start		0.5	Edge	270	1.0	5.2
60	1.0	100	6.9	NA	6.9	192	5.1	1.0	Edge Start		0.5	Edge	220	1.0	5.3

Marking 25A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	80 / 5.5	168	0.120 / 3.0	0.120 / 3.0	0	0.5	300 / 7620	

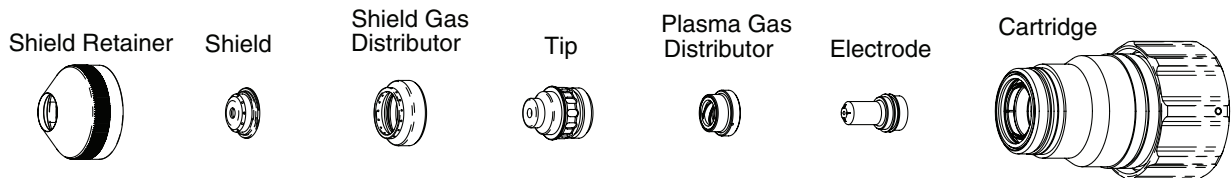
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

200A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	73 / 154
Cutflow	35 / 74	49 / 103



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1073	21-1284	21-1095	21-1042	21-1096	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	20	120	100	NA	120	168	0.300	0.5	0.300	0.250	0.4	0.400	90	0.4	0.131
-	1/2	0.500	20	120	100	NA	120	170	0.300	0.8	0.300	0.250	0.3	0.400	65	0.5	0.135
-	5/8	0.625	20	120	100	NA	100	173	0.300	1.0	0.250	0.200	0.2	0.350	50	0.6	0.142
-	3/4	0.750	20	120	100	NA	100	175	0.300	1.4	0.300	0.250	0.2	0.400	40	0.8	0.143
-	7/8	0.875	20	120	100	NA	100	178	0.300	1.8	0.350	0.300	0.2	0.450	35	1.0	0.148
-	1	1.000	20	120	100	NA	120	184	0.350	2.0	0.350	0.300	0.2	0.450	30	1.0	0.162
-	1 1/4	1.250	20	120	100	NA	120	185	0.350	0.5	Edge Start		0.3	Edge	20	0.5	0.170
-	1 1/2	1.500	20	120	100	NA	120	190	0.350	0.5	Edge Start		0.3	Edge	16	0.5	0.175
-	1 3/4	1.750	20	120	100	NA	120	192	0.350	0.5	Edge Start		0.3	Edge	14	0.5	0.179
-	2	2.000	20	120	100	NA	120	193	0.350	0.5	Edge Start		0.3	Edge	12	0.5	0.182

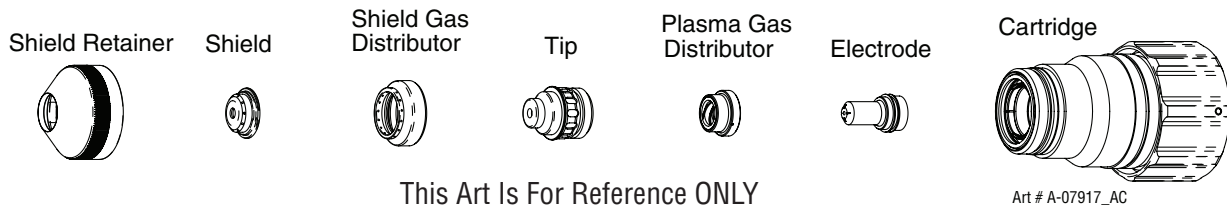
	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	1.4	120	6.9	NA	8.3	168	7.6	0.5	7.6	6.4	0.4	10.2	2190	0.4	3.3
12	1.4	120	6.9	NA	8.3	170	7.6	0.7	7.6	6.4	0.3	10.2	1790	0.5	3.4
15	1.4	120	6.9	NA	7.3	172	7.6	0.9	6.7	5.4	0.2	9.2	1380	0.6	3.6
20	1.4	120	6.9	NA	6.9	176	7.6	1.5	8.0	6.7	0.2	10.5	980	0.9	3.7
25	1.4	120	6.9	NA	8.1	183	8.7	2.0	8.9	7.6	0.2	11.4	780	1.0	4.1
30	1.4	120	6.9	NA	8.3	184	8.9	0.5	Edge Start		0.3	Edge	540	0.5	4.3
35	1.4	120	6.9	NA	8.3	188	8.9	0.5	Edge Start		0.3	Edge	460	0.5	4.4
40	1.4	120	6.9	NA	8.3	190	8.9	0.5	Edge Start		0.3	Edge	390	0.5	4.5
50	1.4	120	6.9	NA	8.3	193	8.9	0.5	Edge Start		0.3	Edge	310	0.5	4.6

Marking 20A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	80 / 5.5	140	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel 200A N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	13 / 28	5 / 19
	25 / 53	5 / 19



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1049	21-1284	21-1067	21-1043	21-1089	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	20	80	90	5	55	155	0.160	0.1	0.200	0.150	0.4	0.300	95	0.1	0.110
-	1/2	0.500	20	80	90	5	55	156	0.160	0.4	0.200	0.150	0.2	0.300	85	0.4	0.115
-	5/8	0.625	20	80	90	5	55	158	0.180	0.8	0.200	0.150	0.2	0.300	65	0.5	0.122
-	3/4	0.750	20	80	90	5	55	163	0.200	1.2	0.200	0.150	0.2	0.300	50	0.7	0.133
-	7/8	0.875	20	80	90	5	55	177	0.250	1.7	0.300	0.250	0.2	0.400	40	0.9	0.149
-	1	1.000	20	80	90	5	55	183	0.300	1.9	0.350	0.300	0.2	0.450	35	1.0	0.148
-	1 1/4	1.250	20	80	90	5	55	185	0.300	0.4	Edge Start		0.2	Edge	20	0.4	0.176
-	1 1/2	1.500	20	80	90	5	55	200	0.350	0.4	Edge Start		0.2	Edge	10	0.4	0.211
-	1 3/4	1.750	20	80	90	5	55	207	0.350	0.4	Edge Start		0.2	Edge	8	0.4	0.216

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	1.4	80	6.2	5	3.8	155	4.1	0.1	5.1	3.8	0.4	7.6	2380	0.1	2.8
15	1.4	80	6.2	5	3.8	157	4.4	0.7	5.1	3.8	0.2	7.6	1790	0.5	3.0
20	1.4	80	6.2	5	3.8	167	5.5	1.3	5.8	4.6	0.2	8.4	1190	0.8	3.5
25	1.4	80	6.2	5	3.8	182	7.5	1.9	8.7	7.5	0.2	11.3	910	1.0	3.8
30	1.4	80	6.2	5	3.8	181	7.3	0.4	Edge Start		0.2	Edge	580	0.4	4.2
35	1.4	80	6.2	5	3.8	193	8.3	0.4	Edge Start		0.2	Edge	380	0.4	4.9
40	1.4	80	6.2	5	3.8	202	8.9	0.4	Edge Start		0.2	Edge	240	0.4	5.4

Marking 20A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	80 / 5.5	140	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

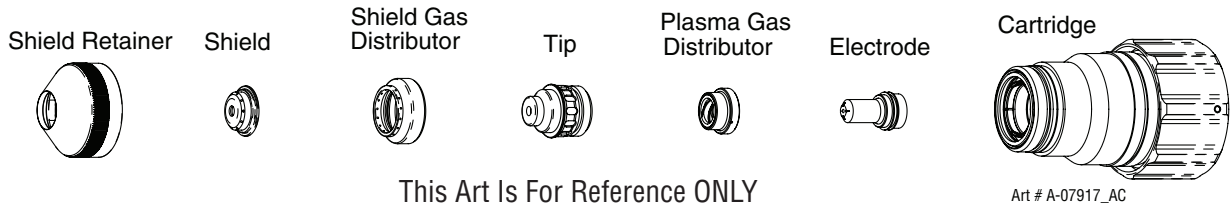
Note 2: Water source used for shield must be demineralized.

Aluminum

200A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	62 / 132
Cutflow	33 / 71	44 / 94



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	< 1" / 25 mm 21-1073 ≥ 1" / 25 mm 21-1094	21-1284	21-1095	21-1042	21-1096	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	20	100	100	NA	110	165	0.300	0.2	0.300	0.250	0.2	0.400	180	0.2	0.113
-	1/2	0.500	20	100	100	NA	110	168	0.300	0.2	0.250	0.200	0.4	0.350	150	0.2	0.119
-	5/8	0.625	20	100	100	NA	110	170	0.300	0.5	0.250	0.200	0.3	0.350	110	0.3	0.120
-	3/4	0.750	20	100	100	NA	110	172	0.300	0.7	0.300	0.250	0.2	0.400	70	0.4	0.130
-	7/8	0.875	20	100	100	NA	110	178	0.350	1.0	0.350	0.300	0.2	0.450	55	0.5	0.139
-	1	1.000	20	100	100	NA	110	180	0.350	1.3	0.400	0.300	0.2	0.500	40	0.7	0.150
-	1 1/4	1.250	20	100	100	NA	110	185	0.400	0.4	Edge Start		0.2	Edge	32	0.4	0.161
-	1 1/2	1.500	20	100	100	NA	110	195	0.400	0.4	Edge Start		0.2	Edge	25	0.4	0.170
-	1 3/4	1.750	20	100	100	NA	110	198	0.400	0.4	Edge Start		0.2	Edge	20	0.4	0.188
-	2	2.000	20	100	100	NA	110	201	0.400	0.4	Edge Start		0.2	Edge	15	0.4	0.205

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	1.4	100	6.9	NA	7.6	165	7.6	0.2	7.4	6.2	0.2	10.0	4460	0.2	2.9
12	1.4	100	6.9	NA	7.6	167	7.6	0.2	6.6	5.4	0.4	9.2	3980	0.2	3.0
15	1.4	100	6.9	NA	7.6	169	7.6	0.4	6.4	5.1	0.3	8.9	3070	0.3	3.0
20	1.4	100	6.9	NA	7.6	174	8.0	0.8	8.0	6.7	0.2	10.5	1660	0.4	3.4
25	1.4	100	6.9	NA	7.6	180	8.9	1.3	10.0	7.6	0.2	12.5	1060	0.7	3.8
30	1.4	100	6.9	NA	7.6	182	10.2	0.4	Edge Start		0.2	Edge	860	0.4	4.0
35	1.4	100	6.9	NA	7.6	190	10.2	0.4	Edge Start		0.2	Edge	720	0.4	4.2
40	1.4	100	6.9	NA	7.6	196	10.2	0.4	Edge Start		0.2	Edge	600	0.4	4.5
50	1.4	100	6.9	NA	7.6	201	10.2	0.4	Edge Start		0.2	Edge	400	0.4	5.2

Marking 20A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	80 / 5.5	140	0.120 / 3.0	0.120 / 3.0	0	0.5	300 / 7620	

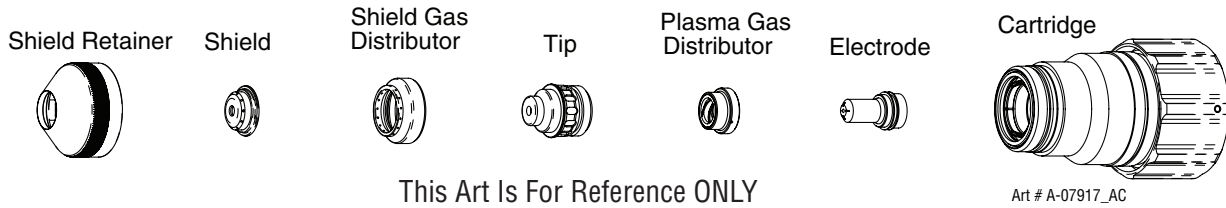
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum

200A

N₂ Plasma / H₂O Shield

Flow Rates		
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	13 / 28	5 / 19
Cutflow	28 / 59	5 / 19



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1049	21-1284	21-1067	21-1043	21-1089	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	20	100	90	5	55	168	0.250	0.3	0.200	0.150	0.2	0.300	110	0.3	0.120
-	5/8	0.625	20	80	100	5	55	170	0.300	0.7	0.250	0.200	0.2	0.350	105	0.5	0.126
-	3/4	0.750	20	80	100	5	55	175	0.300	0.9	0.250	0.200	0.2	0.350	90	0.6	0.127
-	7/8	0.875	20	80	100	5	55	180	0.300	1.2	0.250	0.200	0.2	0.350	75	0.8	0.133
-	1	1.000	20	80	100	5	55	194	0.350	1.6	0.300	0.250	0.2	0.400	50	1.0	0.144
-	1 1/4	1.250	20	80	100	5	55	208	0.400	3.4	0.350	0.300	0.2	0.450	25	2.0	0.180
-	1 1/2	1.500	20	80	100	5	55	210	0.400	0.8	Edge Start		0.2	Edge	20	0.8	0.197
-	1 3/4	1.750	20	80	100	5	55	212	0.400	0.8	Edge Start		0.2	Edge	18	0.8	0.201
-	2	2.000	20	80	100	5	55	215	0.400	0.8	Edge Start		0.2	Edge	12	0.8	0.204

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	1.4	100	6.1	5	3.8	168	6.1	0.2	4.8	3.5	0.2	7.3	2820	0.3	3.0
15	1.4	85	6.7	5	3.8	169	7.3	0.6	6.0	4.7	0.2	8.5	2700	0.4	3.2
20	1.4	80	6.9	5	3.8	176	7.6	1.0	6.4	5.1	0.2	8.9	2170	0.7	3.3
25	1.4	80	6.9	5	3.8	192	8.7	1.5	7.5	6.2	0.2	10.0	1350	1.0	3.6
30	1.4	80	6.9	5	3.8	204	9.8	2.9	8.5	7.3	0.2	11.1	810	1.7	4.3
35	1.4	80	6.9	5	3.8	209	10.2	0.8	Edge Start		0.2	Edge	530	0.8	5.0
40	1.4	80	6.9	5	3.8	211	10.2	0.8	Edge Start		0.2	Edge	490	0.8	5.0
50	1.4	80	6.9	5	3.8	215	10.2	0.8	Edge Start		0.2	Edge	320	0.8	5.2

Marking 20A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	80 / 5.5	140	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

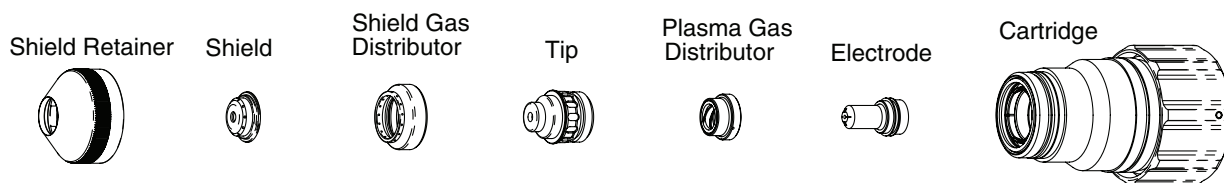
8.04 Robotic and Bevel Cutting 150 - 200 Amp

Mild Steel

200A Bevel Cut

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	162 / 343
Cutflow	102 / 217	133 / 281



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1014	21-1030	21-1285	21-1055	21-1042	21-1093	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.188	0.080	15	100	100	NA	100	0.130 - 0.550	0.2	0.200	0.150	0.5	0.300	250	0.2	0.142
0.250	0.080	15	100	100	NA	100	0.130 - 0.550	0.2	0.200	0.150	0.5	0.300	200	0.2	0.148
0.375	0.080	15	100	100	NA	100	0.150 - 0.550	0.3	0.250	0.200	0.5	0.350	140	0.3	0.162
0.500	0.080	15	100	100	NA	100	0.170 - 0.550	0.7	0.250	0.200	0.5	0.350	115	0.5	0.167
0.625	0.080	15	100	100	NA	100	0.200 - 0.550	0.9	0.250	0.200	0.5	0.350	80	0.6	0.186
0.750	0.080	15	100	100	NA	100	0.200 - 0.550	1.3	0.300	0.250	0.5	0.400	65	0.8	0.186
0.875	0.080	15	100	100	NA	100	0.200 - 0.550	1.6	0.300	0.250	0.5	0.400	57	1.0	0.185
1.000	0.080	15	100	100	NA	100	0.200 - 0.550	1.9	0.300	0.250	0.5	0.400	48	1.2	0.193
1.250	0.080	15	100	100	NA	100	0.200 - 0.550	3.2	0.325	0.250	0.5	0.425	30	2.0	0.196
1.500	0.080	15	100	100	NA	100	0.200 - 0.550	5.8	0.350	0.300	0.5	0.450	20	4.0	0.201
1.750	0.080	15	100	100	NA	100	0.200 - 0.550	1.0	Edge Start		0.5	Edge	15	1.0	0.203
2.000	0.080	15	100	100	NA	100	0.200 - 0.550	1.0	Edge Start		0.5	Edge	10	1.0	0.204
2.500	0.080	15	100	100	NA	100	0.200 - 0.550	1.0	Edge Start		0.5	Edge	8	1.0	0.210

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
5	2.0	1.0	100	6.9	NA	6.9	3.3 - 14.0	0.2	5.1	3.8	0.5	7.6	6170	0.2	3.6
6	2.0	1.0	100	6.9	NA	6.9	3.3 - 14.0	0.2	5.1	3.8	0.5	7.6	5360	0.2	3.7
8	2.0	1.0	100	6.9	NA	6.9	3.6 - 14.0	0.3	5.7	4.5	0.5	8.3	4290	0.3	3.9
10	2.0	1.0	100	6.9	NA	6.9	3.9 - 14.0	0.4	6.4	5.1	0.5	8.9	3460	0.3	4.1
12	2.0	1.0	100	6.9	NA	6.9	4.2 - 14.0	0.6	6.4	5.1	0.5	8.9	3060	0.5	4.2
15	2.0	1.0	100	6.9	NA	6.9	4.9 - 14.0	0.8	6.4	5.1	0.5	8.9	2280	0.6	4.6
20	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	1.4	7.6	6.4	0.5	10.2	1590	0.9	4.7
25	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	1.9	7.6	6.4	0.5	10.2	1250	1.2	4.9
30	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	2.8	8.1	6.4	0.5	10.6	890	1.8	5.0
35	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	4.5	8.6	7.0	0.5	11.1	630	3.0	5.0
40	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	1.0	Edge Start		0.5	Edge	470	1.0	5.1
50	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	1.0	Edge Start		0.5	Edge	270	1.0	5.2
60	2.0	1.0	100	6.9	NA	6.9	5.1 - 14.0	1.0	Edge Start		0.5	Edge	220	1.0	5.3

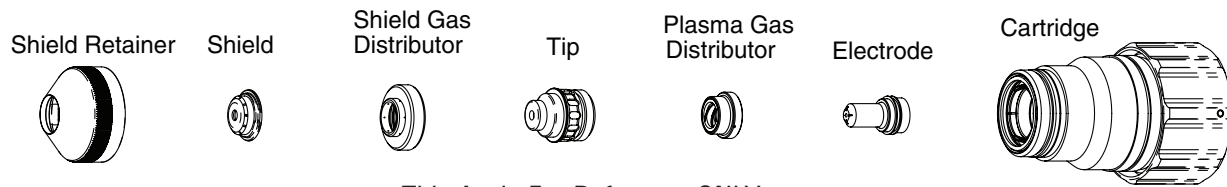
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

200A Bevel Cut

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	73 / 154
Cutflow	35 / 74	49 / 103



This Art Is For Reference ONLY

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1073	21-1284	21-1095	21-1042	21-1096	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.375	0.080	20	120	100	NA	120	0.300 - 0.550	0.5	0.300	0.250	0.4	0.400	90	0.4	0.131
0.500	0.080	20	120	100	NA	120	0.300 - 0.550	0.8	0.300	0.250	0.3	0.400	65	0.5	0.135
0.625	0.080	20	120	100	NA	100	0.300 - 0.550	1.0	0.250	0.200	0.2	0.350	50	0.6	0.142
0.750	0.080	20	120	100	NA	100	0.300 - 0.550	1.4	0.300	0.250	0.2	0.400	40	0.8	0.143
0.875	0.080	20	120	100	NA	100	0.300 - 0.550	1.8	0.350	0.300	0.2	0.450	35	1.0	0.148
1.000	0.080	20	120	100	NA	120	0.350 - 0.550	2.0	0.350	0.300	0.2	0.450	30	1.0	0.162
1.250	0.080	20	120	100	NA	120	0.350 - 0.550	0.5	Edge Start		0.3	Edge	20	0.5	0.170
1.500	0.080	20	120	100	NA	120	0.350 - 0.550	0.5	Edge Start		0.3	Edge	16	0.5	0.175
1.750	0.080	20	120	100	NA	120	0.350 - 0.550	0.5	Edge Start		0.3	Edge	14	0.5	0.179
2.000	0.080	20	120	100	NA	120	0.350 - 0.550	0.5	Edge Start		0.3	Edge	12	0.5	0.182

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	2.0	1.4	120	6.9	NA	8.3	7.6 - 14.0	0.5	7.6	6.4	0.4	10.2	2190	0.4	3.3
12	2.0	1.4	120	6.9	NA	8.3	7.6 - 14.0	0.7	7.6	6.4	0.3	10.2	1790	0.5	3.4
15	2.0	1.4	120	6.9	NA	7.3	7.6 - 14.0	0.9	6.7	5.4	0.2	9.2	1380	0.6	3.6
20	2.0	1.4	120	6.9	NA	6.9	7.6 - 14.0	1.5	8.0	6.7	0.2	10.5	980	0.9	3.7
25	2.0	1.4	120	6.9	NA	8.1	8.7 - 14.0	2.0	8.9	7.6	0.2	11.4	780	1.0	4.1
30	2.0	1.4	120	6.9	NA	8.3	8.9 - 14.0	0.5	Edge Start		0.3	Edge	540	0.5	4.3
35	2.0	1.4	120	6.9	NA	8.3	8.9 - 14.0	0.5	Edge Start		0.3	Edge	460	0.5	4.4
40	2.0	1.4	120	6.9	NA	8.3	8.9 - 14.0	0.5	Edge Start		0.3	Edge	390	0.5	4.5
50	2.0	1.4	120	6.9	NA	8.3	8.9 - 14.0	0.5	Edge Start		0.3	Edge	310	0.5	4.6

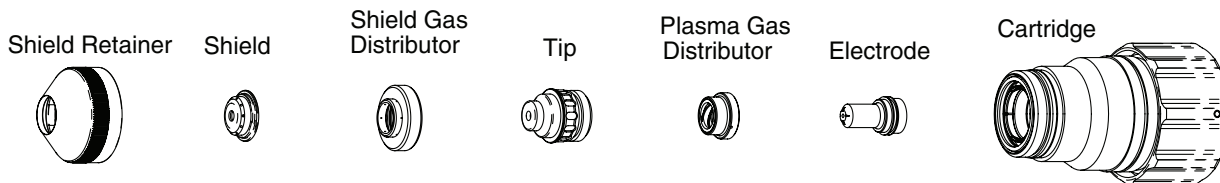
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

200A Bevel Cut

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	13 / 28	5 / 19
	25 / 53	5 / 19



This Art Is For Reference ONLY

Art # A-08552

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1049	21-1284	21-1067	21-1043	21-1089	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.375	0.080	20	80	90	5	55	0.160 - 0.550	0.1	0.200	0.150	0.4	0.300	95	0.1	0.110
0.500	0.080	20	80	90	5	55	0.160 - 0.550	0.4	0.200	0.150	0.2	0.300	85	0.4	0.115
0.625	0.080	20	80	90	5	55	0.180 - 0.550	0.8	0.200	0.150	0.2	0.300	65	0.5	0.122
0.750	0.080	20	80	90	5	55	0.200 - 0.550	1.2	0.200	0.150	0.2	0.300	50	0.7	0.133
0.875	0.080	20	80	90	5	55	0.250 - 0.550	1.7	0.300	0.250	0.2	0.400	40	0.9	0.149
1.000	0.080	20	80	90	5	55	0.300 - 0.550	1.9	0.350	0.300	0.2	0.450	35	1.0	0.148
1.250	0.080	20	80	90	5	55	0.300 - 0.550	0.4	Edge Start		0.2	Edge	20	0.4	0.176
1.500	0.080	20	80	90	5	55	0.350 - 0.450	0.4	Edge Start		0.2	Edge	10	0.4	0.211
1.750	0.080	20	80	90	5	55	0.350 - 0.450	0.4	Edge Start		0.2	Edge	8	0.4	0.216

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	2.0	1.4	80	6.2	5	3.8	4.1 - 14.0	0.1	5.1	3.8	0.4	7.6	2380	0.1	2.8
15	2.0	1.4	80	6.2	5	3.8	4.4 - 14.0	0.7	5.1	3.8	0.2	7.6	1790	0.5	3.0
20	2.0	1.4	80	6.2	5	3.8	5.5 - 14.0	1.3	5.8	4.6	0.2	8.4	1190	0.8	3.5
25	2.0	1.4	80	6.2	5	3.8	7.5 - 14.0	1.9	8.7	7.5	0.2	11.3	910	1.0	3.8
30	2.0	1.4	80	6.2	5	3.8	7.3 - 14.0	0.4	Edge Start		0.2	Edge	580	0.4	4.2
35	2.0	1.4	80	6.2	5	3.8	8.3 - 11.4	0.4	Edge Start		0.2	Edge	380	0.4	4.9
40	2.0	1.4	80	6.2	5	3.8	8.9 - 11.4	0.4	Edge Start		0.2	Edge	240	0.4	5.4

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

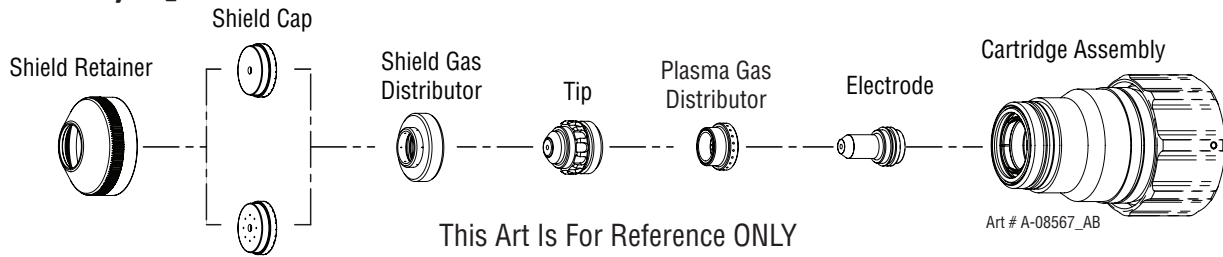
Note 2: Water source used for shield must be demineralized.

Aluminum

200A Bevel Cut

H35 Plasma / N₂ Shield

	Flow Rates (SLPM / SCFH)	
	H35	N ₂
	Preflow	N ₂
Preflow	- / -	62 / 132
Cutflow	33 / 71	44 / 94



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	< 1" / 25 mm 21-1073 ≥ 1" / 25 mm 21-1094	21-1284	21-1095	21-1042	21-1096	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.375	0.080	20	100	100	NA	110	0.300 - 0.550	0.2	0.300	0.250	0.2	0.400	180	0.2	0.113
0.500	0.080	20	100	100	NA	110	0.300 - 0.550	0.2	0.250	0.200	0.4	0.350	150	0.2	0.119
0.625	0.080	20	100	100	NA	110	0.300 - 0.550	0.5	0.250	0.200	0.3	0.350	110	0.3	0.120
0.750	0.080	20	100	100	NA	110	0.300 - 0.550	0.7	0.300	0.250	0.2	0.400	70	0.4	0.130
0.875	0.080	20	100	100	NA	110	0.350 - 0.550	1.0	0.350	0.300	0.2	0.450	55	0.5	0.139
1.000	0.080	20	100	100	NA	110	0.350 - 0.550	1.3	0.400	0.300	0.2	0.500	40	0.7	0.150
1.250	0.080	20	100	100	NA	110	0.400 - 0.550	0.4	Edge Start		0.2	Edge	32	0.4	0.161
1.500	0.080	20	100	100	NA	110	0.400 - 0.550	0.4	Edge Start		0.2	Edge	25	0.4	0.170
1.750	0.080	20	100	100	NA	110	0.400 - 0.550	0.4	Edge Start		0.2	Edge	20	0.4	0.188
2.000	0.080	20	100	100	NA	110	0.400 - 0.550	0.4	Edge Start		0.2	Edge	15	0.4	0.205

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	2.0	1.4	100	6.9	NA	7.6	7.6 - 14.0	0.2	7.4	6.2	0.2	10.0	4460	0.2	2.9
12	2.0	1.4	100	6.9	NA	7.6	7.6 - 14.0	0.2	6.6	5.4	0.4	9.2	3980	0.2	3.0
15	2.0	1.4	100	6.9	NA	7.6	7.6 - 14.0	0.4	6.4	5.1	0.3	8.9	3070	0.3	3.0
20	2.0	1.4	100	6.9	NA	7.6	8.0 - 14.0	0.8	8.0	6.7	0.2	10.5	1660	0.4	3.4
25	2.0	1.4	100	6.9	NA	7.6	8.9 - 14.0	1.3	10.0	7.6	0.2	12.5	1060	0.7	3.8
30	2.0	1.4	100	6.9	NA	7.6	10.2 - 14.0	0.4	Edge Start		0.2	Edge	860	0.4	4.0
35	2.0	1.4	100	6.9	NA	7.6	10.2 - 14.0	0.4	Edge Start		0.2	Edge	720	0.4	4.2
40	2.0	1.4	100	6.9	NA	7.6	10.2 - 14.0	0.4	Edge Start		0.2	Edge	600	0.4	4.5
50	2.0	1.4	100	6.9	NA	7.6	10.2 - 14.0	0.4	Edge Start		0.2	Edge	400	0.4	5.2

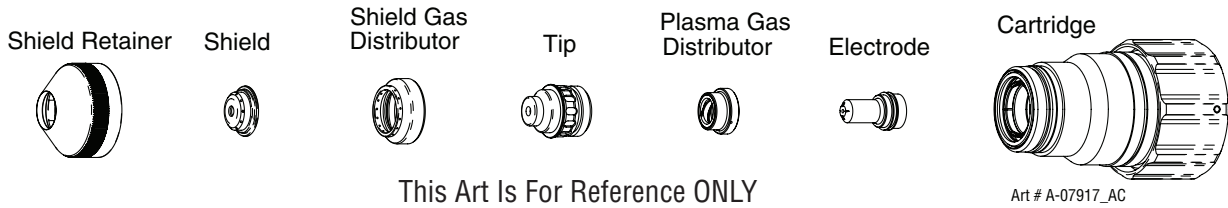
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum

200A Bevel Cut

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	13 / 28	5 / 19
	28 / 59	5 / 19



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1049	21-1284	21-1067	21-1043	21-1089	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.500	0.080	20	100	90	5	55	0.250 - 0.550	0.3	0.200	0.150	0.2	0.300	110	0.3	0.120
0.625	0.080	20	80	100	5	55	0.300 - 0.550	0.7	0.250	0.200	0.2	0.350	105	0.5	0.126
0.750	0.080	20	80	100	5	55	0.300 - 0.550	0.9	0.250	0.200	0.2	0.350	90	0.6	0.127
0.875	0.080	20	80	100	5	55	0.300 - 0.550	1.2	0.250	0.200	0.2	0.350	75	0.8	0.133
1.000	0.080	20	80	100	5	55	0.350 - 0.550	1.6	0.300	0.250	0.2	0.400	50	1.0	0.144
1.250	0.080	20	80	100	5	55	0.400 - 0.550	3.4	0.350	0.300	0.2	0.450	25	2.0	0.180
1.500	0.080	20	80	100	5	55	0.400 - 0.550	0.8	Edge Start		0.2	Edge	20	0.8	0.197
1.750	0.080	20	80	100	5	55	0.400 - 0.550	0.8	Edge Start		0.2	Edge	18	0.8	0.201
2.000	0.080	20	80	100	5	55	0.400 - 0.550	0.8	Edge Start		0.2	Edge	12	0.8	0.204

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	2.0	1.4	100	6.1	5	3.8	6.1 - 14.0	0.2	4.8	3.5	0.2	7.3	2820	0.3	3.0
15	2.0	1.4	85	6.7	5	3.8	7.3 - 14.0	0.6	6.0	4.7	0.2	8.5	2700	0.4	3.2
20	2.0	1.4	80	6.9	5	3.8	7.6 - 14.0	1.0	6.4	5.1	0.2	8.9	2170	0.7	3.3
25	2.0	1.4	80	6.9	5	3.8	8.7 - 14.0	1.5	7.5	6.2	0.2	10.0	1350	1.0	3.6
30	2.0	1.4	80	6.9	5	3.8	9.8 - 14.0	2.9	8.5	7.3	0.2	11.1	810	1.7	4.3
35	2.0	1.4	80	6.9	5	3.8	10.2 - 14.0	0.8	Edge Start		0.2	Edge	530	0.8	5.0
40	2.0	1.4	80	6.9	5	3.8	10.2 - 14.0	0.8	Edge Start		0.2	Edge	490	0.8	5.0
50	2.0	1.4	80	6.9	5	3.8	10.2 - 14.0	0.8	Edge Start		0.2	Edge	320	0.8	5.2

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

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Chart is for Customer Settings
Make Copies as Desired

	Flow Rates	
	O ₂ (SLPM / SCFH)	Air (GPH / LPH)
Preflow		
Cutflow		

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

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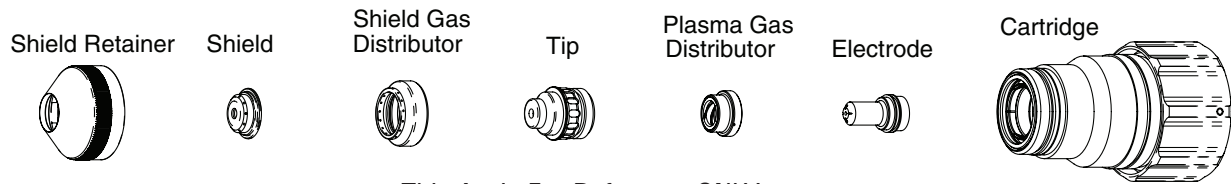
8.05 Standard Cutting 250 - 300 Amp

Mild Steel

250A

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	160 / 339
Cutflow	36 / 76	132 / 279



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1014	21-1030	21-1285	21-1056	21-1042	21-1093	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	5/8	0.625	15	100	100	NA	100	147	0.170	0.7	0.300	0.250	0.5	0.400	115	0.6	0.167
-	3/4	0.750	15	100	100	NA	100	152	0.180	1.0	0.350	0.300	0.5	0.450	90	0.8	0.171
-	7/8	0.875	15	100	100	NA	100	154	0.190	1.4	0.350	0.300	0.5	0.450	70	1.0	0.170
-	1	1.000	15	100	100	NA	90	157	0.200	1.9	0.400	0.300	0.5	0.500	60	1.4	0.181
-	1 1/4	1.250	15	100	100	NA	100	160	0.200	2.5	0.400	0.300	0.5	0.500	43	1.8	0.191
-	1 1/2	1.500	15	100	100	NA	100	164	0.200	4.2	0.400	0.350	0.5	0.550	33	3.2	0.197
-	1 3/4	1.750	15	100	100	NA	100	171	0.200	1.0	Edge Start		0.5	Edge	23	1.0	0.197
-	2	2.000	15	100	100	NA	100	177	0.200	1.0	Edge Start		0.5	Edge	15	1.0	0.197

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	1.0	100	6.9	NA	6.9	146	4.2	0.6	7.3	6.0	0.5	9.8	3100	0.5	4.2
20	1.0	100	6.9	NA	6.9	153	4.6	1.1	8.9	7.6	0.5	11.4	2130	0.9	4.3
25	1.0	100	6.9	NA	6.3	157	5.0	1.8	10.0	7.6	0.5	12.5	1560	1.3	4.6
30	1.0	100	6.9	NA	6.7	159	5.1	2.3	10.2	7.6	0.5	12.7	1210	1.7	4.8
35	1.0	100	6.9	NA	6.9	162	5.1	3.4	10.2	8.3	0.5	13.4	960	2.5	4.9
40	1.0	100	6.9	NA	6.9	167	5.1	1.0	Edge Start		0.5	Edge	710	1.0	5.0
50	1.0	100	6.9	NA	6.9	176	5.1	1.0	Edge Start		0.5	Edge	410	1.0	5.0

Marking 25A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	159	0.120 / 3.0	0.120 / 3.0	0	0.5	300 / 7620	

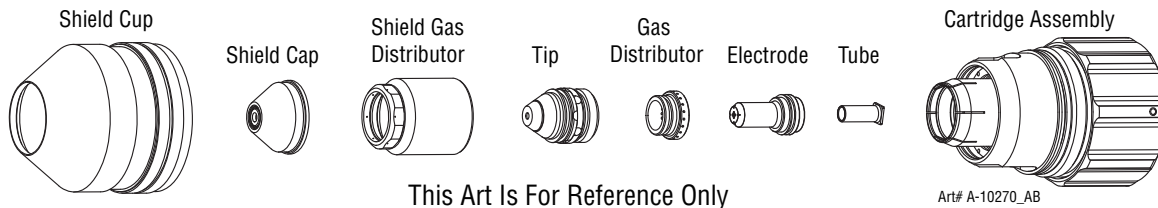
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Mild Steel

300A XTL

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	194 / 412
Cutflow	27 / 58	160 / 340



This Art Is For Reference Only

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode / Tube	Cartridge
21-1305	21-1105	21-1295	21-1160	21-1042	21-1308 9-7921	21-1300

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	20	100	100	NA	100	159	0.200	0.3	0.400	0.200	0.5	0.450	140	0.2	0.149
-	5/8	0.625	20	100	100	NA	100	161	0.200	0.4	0.400	0.200	0.5	0.450	115	0.3	0.179
-	3/4	0.750	20	100	100	NA	100	158	0.200	0.6	0.400	0.200	0.5	0.450	100	0.4	0.185
-	7/8	0.875	20	100	100	NA	100	161	0.200	0.8	0.400	0.200	0.5	0.450	85	0.6	0.182
-	1	1.000	20	100	100	NA	100	164	0.200	1.1	0.400	0.250	0.5	0.450	70	0.9	0.183
-	1 1/4	1.250	20	100	100	NA	100	164	0.200	1.5	0.400	0.300	0.5	0.500	50	1.2	0.193
-	1 1/2	1.500	20	100	100	NA	100	175	0.200	2.9	0.400	0.350	0.5	0.500	35	2.7	0.208
-	1 3/4	1.750	20	100	100	NA	100	179	0.200	5.3	0.400	0.400	0.5	Edge	25	5.2	0.250
-	2	2.000	20	100	100	NA	100	182	0.200	1.0	Edge Start		0.5	Edge	18	1.0	0.245
-	2 1/2	2.500	20	100	100	NA	100	201	0.200	1.0	Edge Start		0.5	Edge	10	1.0	0.416
-	3	3.000	20	100	100	NA	100	215	0.200	1.0	Edge Start		0.5	Edge	7	1.0	0.500

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	1.4	100	6.9	NA	6.9	159	5.1	0.3	10.2	5.1	0.5	11.4	3700	0.2	3.6
15	1.4	100	6.9	NA	6.9	160	5.1	0.4	10.2	5.1	0.5	11.4	3100	0.3	4.3
20	1.4	100	6.9	NA	6.9	159	5.1	0.7	10.2	5.1	0.5	11.4	2430	0.5	4.7
25	1.4	100	6.9	NA	6.9	164	5.1	1.1	10.2	6.2	0.5	11.4	1830	0.9	4.6
30	1.4	100	6.9	NA	6.9	164	5.1	1.4	10.2	7.3	0.5	12.4	1410	1.1	4.8
35	1.4	100	6.9	NA	6.9	170	5.1	2.2	10.2	8.3	0.5	12.7	1080	2.0	5.1
40	1.4	100	6.9	NA	6.9	176	5.1	3.6	10.2	9.3	0.5	Edge	810	3.4	5.6
50	1.4	100	6.9	NA	6.9	181	5.1	1.0	Edge Start		0.5	Edge	470	1.0	5.9
60	1.4	100	6.9	NA	6.9	196	5.1	1.0	Edge Start		0.5	Edge	310	1.0	9.4
70	1.4	100	6.9	NA	6.9	208	5.1	1.0	Edge Start		0.5	Edge	220	1.0	11.7

Marking 30A Arc Current	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	158	0.120 / 3.0	0.120 / 3.0	0	0.5	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

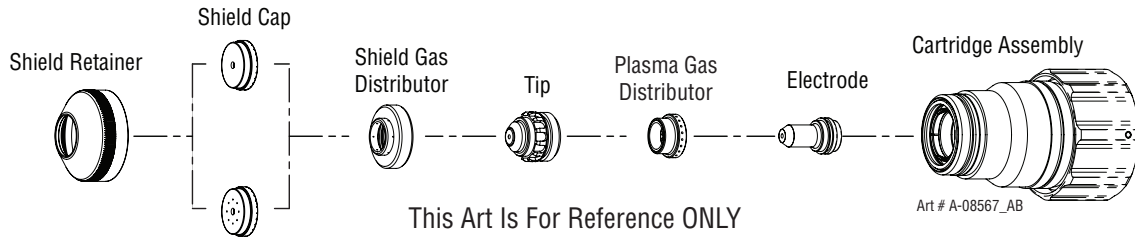
Use CCM 4.5.0 or later and Electronic Cut Chart 2.4.0 or later

Stainless Steel

300A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	74 / 157
Cutflow	44 / 93	51 / 108



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	< 1" / 25 mm 21-1038 ≥ 1" / 25 mm 21-1039	21-1284	21-1065	21-1041	21-1091	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	20	120	100	NA	120	160	0.350	0.2	0.250	0.200	0.4	0.350	85	0.2	0.175
-	1/2	0.500	20	120	100	NA	120	168	0.350	0.4	0.250	0.200	0.2	0.350	75	0.4	0.193
-	5/8	0.625	20	120	100	NA	90	163	0.350	0.7	0.275	0.250	0.2	0.375	65	0.5	0.197
-	3/4	0.750	20	120	100	NA	90	168	0.350	0.9	0.275	0.250	0.2	0.375	55	0.6	0.195
-	7/8	0.875	20	120	100	NA	90	170	0.350	1.1	0.275	0.250	0.2	0.375	45	0.7	0.210
-	1	1.000	20	120	100	NA	120	173	0.350	1.6	0.400	0.400	0.2	0.500	35	0.9	0.226
-	1 1/4	1.250	20	120	100	NA	120	180	0.400	1.8	0.400	0.400	0.2	0.700	30	1.0	0.203
-	1 1/2	1.500	20	120	100	NA	120	180	0.400	0.5	Edge Start		0.2	Edge	25	0.5	0.220
-	1 3/4	1.750	20	120	100	NA	120	183	0.400	0.5	Edge Start		0.2	Edge	21	0.5	0.229
-	2	2.000	20	120	100	NA	120	186	0.400	0.5	Edge Start		0.2	Edge	17	0.5	0.237

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	1.4	120	6.9	NA	8.3	161	8.9	0.2	6.4	5.1	0.4	8.9	2120	0.2	4.5
12	1.4	120	6.9	NA	8.3	166	8.9	0.4	6.4	5.1	0.2	8.9	1960	0.4	4.8
15	1.4	120	6.9	NA	6.8	164	8.9	0.6	6.8	6.0	0.2	9.3	1720	0.5	5.0
20	1.4	120	6.9	NA	6.2	169	8.9	1.0	7.0	6.4	0.2	9.5	1320	0.6	5.1
25	1.4	120	6.9	NA	8.0	173	8.9	1.5	9.8	9.7	0.2	12.3	920	0.9	5.7
30	1.4	120	6.9	NA	8.3	178	9.8	1.7	10.2	10.2	0.2	16.4	800	1.0	5.3
35	1.4	120	6.9	NA	8.3	184	10.8	1.9	10.2	10.2	0.2	20.4	700	1.1	4.9
40	1.4	120	6.9	NA	8.3	181	10.2	0.5	Edge Start		0.2	Edge	600	0.5	5.7
45	1.4	120	6.9	NA	8.3	183	10.2	0.5	Edge Start		0.2	Edge	520	0.5	5.8
50	1.4	120	6.9	NA	8.3	186	10.2	0.5	Edge Start		0.2	Edge	440	0.5	6.0

Marking 24A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	135	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

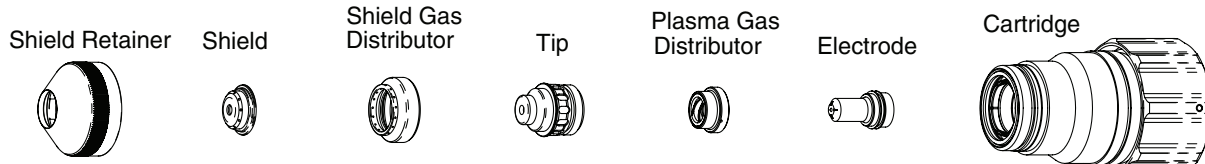
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

300A

N₂ Plasma / H₂O Shield

Flow Rates		
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	23 / 48	8 / 30
Cutflow	63 / 134	8 / 30



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1046	21-1284	21-1066	21-1043	21-1089	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	20	120	100	8	55	150	0.150	0.3	0.250	0.200	0.2	0.350	140	0.3	0.144
-	1/2	0.500	20	120	100	8	55	159	0.150	0.5	0.250	0.200	0.2	0.350	100	0.5	0.154
-	5/8	0.625	20	120	100	8	55	158	0.150	0.8	0.250	0.200	0.2	0.350	75	0.6	0.153
-	3/4	0.750	20	120	100	8	55	166	0.200	0.9	0.400	0.300	0.2	0.500	55	0.7	0.173
-	7/8	0.875	20	120	100	8	55	180	0.300	1.8	0.400	0.300	0.2	0.500	45	1.1	0.210
-	1	1.000	20	120	100	8	55	182	0.300	2.1	0.400	0.300	0.2	0.500	40	1.3	0.210
-	1 1/4	1.250	20	120	100	8	55	196	0.350	3.5	0.400	0.300	0.2	0.500	30	2.0	0.230
-	1 1/2	1.500	20	120	100	8	55	198	0.350	1.0	Edge Start		0.2	Edge	25	1.0	0.232
-	1 3/4	1.750	20	120	100	8	55	198	0.350	1.0	Edge Start		0.2	Edge	18	1.0	0.237
-	2	2.000	20	120	100	8	55	205	0.350	1.0	Edge Start		0.2	Edge	12	1.0	0.253

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	1.4	120	6.9	8	3.8	151	3.8	0.3	6.4	5.1	0.2	8.9	3400	0.3	3.7
12	1.4	120	6.9	8	3.8	157	3.8	0.5	6.4	5.1	0.2	8.9	2760	0.5	3.9
15	1.4	120	6.9	8	3.8	158	3.8	0.7	6.4	5.1	0.2	8.9	2080	0.6	3.9
20	1.4	120	6.9	8	3.8	170	5.8	1.2	10.2	7.6	0.2	12.7	1320	0.8	4.7
25	1.4	120	6.9	8	3.8	182	7.6	2.1	10.2	7.6	0.2	12.7	1030	1.3	5.3
30	1.4	120	6.9	8	3.8	192	8.5	3.1	10.2	7.6	0.2	12.7	830	1.8	5.7
35	1.4	120	6.9	8	3.8	198	8.9	1.0	Edge Start		0.2	Edge	720	1.0	5.8
40	1.4	120	6.9	8	3.8	198	8.9	1.0	Edge Start		0.2	Edge	580	1.0	5.9
50	1.4	120	6.9	8	3.8	204	8.9	1.0	Edge Start		0.2	Edge	320	1.0	6.4

Marking 24A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures			Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)	Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	115	0.120 / 3.0	0	0.3	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

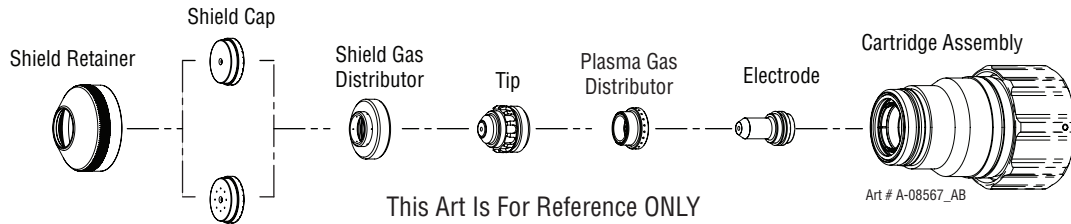
Note 2: Water source used for shield must be demineralized.

Aluminum

300A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	74 / 156
Cutflow	44 / 93	51 / 107



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	< 1" / 25 mm 21-1038 ≥ 1" / 25 mm 21-1039	21-1284	21-1065	21-1041	21-1091	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/4	0.250	20	120	100	NA	120	163	0.400	0.1	0.300	0.250	0.5	0.400	300	0.1	0.182
-	3/8	0.375	20	120	100	NA	120	163	0.400	0.2	0.300	0.250	0.4	0.400	275	0.2	0.186
-	1/2	0.500	20	120	100	NA	120	153	0.300	0.4	0.300	0.250	0.3	0.400	210	0.3	0.174
-	5/8	0.625	20	120	100	NA	90	160	0.300	0.6	0.250	0.300	0.2	0.350	140	0.4	0.169
-	3/4	0.750	20	120	100	NA	90	159	0.300	0.8	0.250	0.300	0.2	0.350	110	0.5	0.172
-	7/8	0.875	20	120	100	NA	90	162	0.300	1.0	0.300	0.250	0.2	0.400	95	0.6	0.183
-	1	1.000	20	120	100	NA	120	165	0.350	1.2	0.350	0.300	0.2	0.450	85	0.7	0.190
-	1 1/4	1.250	20	120	100	NA	120	168	0.400	1.6	0.400	0.400	0.2	0.500	60	0.8	0.205
-	1 1/2	1.500	20	120	100	NA	120	177	0.400	1.5	Edge Start		0.2	Edge	45	1.0	0.215
-	1 3/4	1.750	20	120	100	NA	120	182	0.400	0.4	Edge Start		0.2	Edge	35	0.4	0.226
-	2	2.000	20	120	100	NA	120	188	0.400	0.4	Edge Start		0.2	Edge	25	0.4	0.215

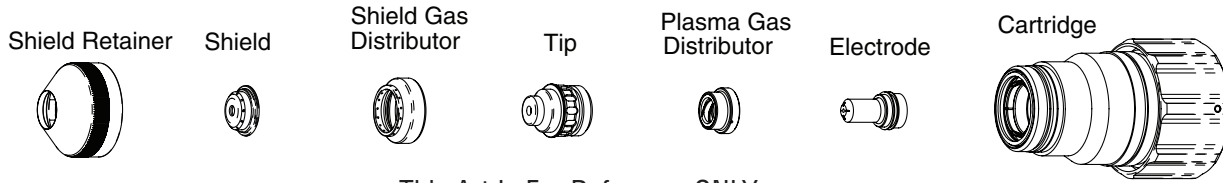
	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
6	1.4	120	6.9	NA	8.3	163	10.2	0.1	7.6	6.4	0.5	10.2	7690	0.1	4.6
8	1.4	120	6.9	NA	8.3	163	10.2	0.2	7.6	6.4	0.4	10.2	7290	0.2	4.7
10	1.4	120	6.9	NA	8.3	162	9.8	0.2	7.6	6.4	0.4	10.2	6740	0.2	4.7
12	1.4	120	6.9	NA	8.3	155	8.2	0.4	7.6	6.4	0.3	10.2	5700	0.3	4.5
15	1.4	120	6.9	NA	6.8	158	7.6	0.5	6.7	7.3	0.2	9.2	4050	0.4	4.3
20	1.4	120	6.9	NA	6.2	160	7.6	0.9	6.7	7.2	0.2	9.3	2680	0.5	4.5
25	1.4	120	6.9	NA	8.0	165	8.7	1.2	8.7	7.5	0.2	11.3	2190	0.7	4.8
30	1.4	120	6.9	NA	8.3	167	9.8	1.5	9.8	9.5	0.2	12.4	1700	0.8	5.1
35	1.4	120	6.9	NA	8.3	175	10.2	1.5	Edge Start		0.2	Edge	1270	1.0	5.3
40	1.4	120	6.9	NA	8.3	178	10.2	1.2	Edge Start		0.2	Edge	1070	0.8	5.5
50	1.4	120	6.9	NA	8.3	187	10.2	0.4	Edge Start		0.2	Edge	670	0.4	5.5

Marking 24A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	135	0.120 / 3.0	0.120 / 3.0	0	0.4	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum 300A N₂ Plasma / H₂O Shield

Flow Rates		
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	23 / 48	8 / 30
Cutflow	63 / 134	8 / 30



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1046	21-1284	21-1066	21-1043	21-1089	21-1022

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)		Shield (H ₂ O)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	20	120	100	8	55	160	0.200	0.4	0.250	0.150	0.2	0.300	120	0.3	0.161
-	5/8	0.625	20	120	100	8	55	164	0.200	0.5	0.250	0.150	0.2	0.300	100	0.4	0.165
-	3/4	0.750	20	120	100	8	55	170	0.250	0.9	0.400	0.300	0.2	0.500	80	0.5	0.174
-	7/8	0.875	20	120	100	8	55	173	0.250	1.0	0.400	0.300	0.2	0.500	70	0.6	0.175
-	1	1.000	20	120	100	8	55	175	0.250	1.2	0.400	0.300	0.2	0.500	60	0.7	0.190
-	1 1/4	1.250	20	120	100	8	55	180	0.250	2.2	0.400	0.300	0.2	0.500	40	1.2	0.185
-	1 1/2	1.500	20	120	100	8	55	184	0.300	3.5	Edge Start		0.2	Edge	25	1.6	0.190
-	1 3/4	1.750	20	120	100	8	55	196	0.300	0.6	Edge Start		0.2	Edge	15	0.6	0.213
-	2	2.000	20	120	100	8	55	200	0.300	0.6	Edge Start		0.2	Edge	10	0.6	0.205

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N ₂)		Shield (H ₂ O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	1.4	120	6.9	8	3.8	163	5.1	0.5	6.4	3.8	0.2	7.6	2680	0.4	4.2
20	1.4	120	6.9	8	3.8	171	6.4	0.9	10.2	7.6	0.2	12.7	1960	0.5	4.4
25	1.4	120	6.9	8	3.8	175	6.4	1.2	10.2	7.6	0.2	12.7	1560	0.7	4.8
30	1.4	120	6.9	8	3.8	179	6.4	1.9	10.2	7.6	0.2	12.7	1160	1.1	4.7
35	1.4	120	6.9	8	3.8	178	7.6	3.4	Edge Start		0.2	Edge	760	1.6	4.5
40	1.4	120	6.9	8	3.8	188	7.6	2.6	Edge Start		0.2	Edge	560	1.3	5.0
50	1.4	120	6.9	8	3.8	199	7.6	0.6	Edge Start		0.2	Edge	270	0.6	5.2

Marking 24A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	115	0.120 / 3.0	0.120 / 3.0	0	0.3	300 / 7620	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

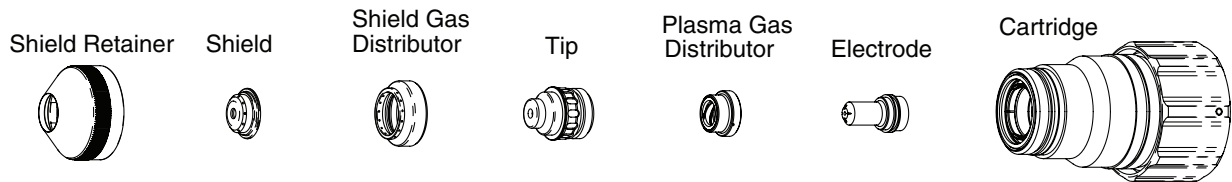
8.06 Robotic and Bevel Cutting 250 - 300 Amp

Mild Steel

250A Bevel Cut

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	160 / 339
Cutflow	36 / 76	132 / 279



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1014	21-1030	21-1285	21-1056	21-1042	21-1093	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.625	0.080	15	100	100	NA	100	0.170 - 0.360	0.7	0.300	0.250	0.5	0.400	115	0.6	0.167
0.750	0.080	15	100	100	NA	100	0.180 - 0.360	1.0	0.350	0.300	0.5	0.450	90	0.8	0.171
0.875	0.080	15	100	100	NA	100	0.190 - 0.360	1.4	0.350	0.300	0.5	0.450	70	1.0	0.170
1.000	0.080	15	100	100	NA	90	0.200 - 0.360	1.9	0.400	0.300	0.5	0.500	60	1.4	0.181
1.250	0.080	15	100	100	NA	100	0.200 - 0.360	2.5	0.400	0.300	0.5	0.500	43	1.8	0.191
1.500	0.080	15	100	100	NA	100	0.200 - 0.360	4.2	0.400	0.350	0.5	0.550	33	3.2	0.197
1.750	0.080	15	100	100	NA	100	0.200 - 0.360	1.0	Edge Start		0.5	Edge	23	1.0	0.197
2.000	0.080	15	100	100	NA	100	0.200 - 0.360	1.0	Edge Start		0.5	Edge	15	1.0	0.197

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	2.0	1.0	100	6.9	NA	6.9	4.2 - 9.1	0.6	7.3	6.0	0.5	9.8	3100	0.5	4.2
20	2.0	1.0	100	6.9	NA	6.9	4.6 - 9.1	1.1	8.9	7.6	0.5	11.4	2130	0.9	4.3
25	2.0	1.0	100	6.9	NA	6.3	5 - 9.1	1.8	10.0	7.6	0.5	12.5	1560	1.3	4.6
30	2.0	1.0	100	6.9	NA	6.7	5.1 - 9.1	2.3	10.2	7.6	0.5	12.7	1210	1.7	4.8
35	2.0	1.0	100	6.9	NA	6.9	5.1 - 9.1	3.4	10.2	8.3	0.5	13.4	960	2.5	4.9
40	2.0	1.0	100	6.9	NA	6.9	5.1 - 9.1	1.0	Edge Start		0.5	Edge	710	1.0	5.0
50	2.0	1.0	100	6.9	NA	6.9	5.1 - 9.1	1.0	Edge Start		0.5	Edge	410	1.0	5.0

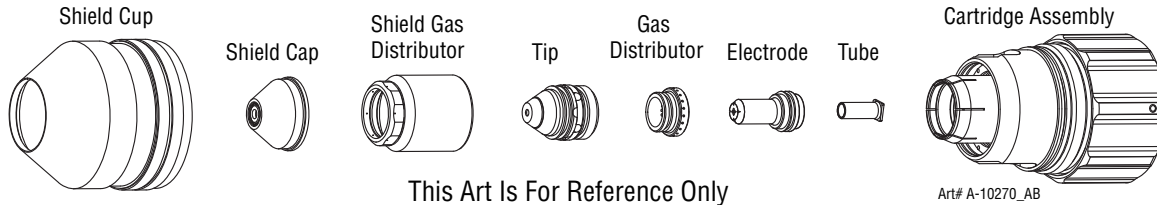
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Mild Steel

300A XTL Bevel Cut

O₂ Plasma / Air Shield

	Flow Rates (SLPM / SCFH)	
	O ₂	Air
	Preflow	Air
Preflow	- / -	194 / 412
Cutflow	27 / 58	160 / 340



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1105	21-1295	21-1160	21-1042	21-1308 9-7921	21-1300

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.500	0.080	20	100	100	NA	100	0.200 - 0.550	0.3	0.400	0.200	0.5	0.450	140	0.2	0.149
0.625	0.080	20	100	100	NA	100	0.200 - 0.550	0.4	0.400	0.200	0.5	0.450	115	0.3	0.179
0.750	0.080	20	100	100	NA	100	0.200 - 0.550	0.6	0.400	0.200	0.5	0.450	100	0.4	0.185
0.875	0.080	20	100	100	NA	100	0.200 - 0.550	0.8	0.400	0.200	0.5	0.450	85	0.6	0.182
1.000	0.080	20	100	100	NA	100	0.200 - 0.550	1.1	0.400	0.250	0.5	0.450	70	0.9	0.183
1.250	0.080	20	100	100	NA	100	0.200 - 0.550	1.5	0.400	0.300	0.5	0.500	50	1.2	0.193
1.500	0.080	20	100	100	NA	100	0.200 - 0.550	2.9	0.400	0.350	0.5	0.500	35	2.7	0.208
1.750	0.080	20	100	100	NA	100	0.200 - 0.550	5.3	0.400	0.400	0.5	Edge	25	5.2	0.250
2.000	0.080	20	100	100	NA	100	0.200 - 0.550	1.0	Edge Start		0.5	Edge	18	1.0	0.245
2.500	0.080	20	100	100	NA	100	0.200 - 0.550	1.0	Edge Start		0.5	Edge	10	1.0	0.416
3.000	0.080	20	100	100	NA	100	0.200 - 0.550	1.0	Edge Start		0.5	Edge	7	1.0	0.500

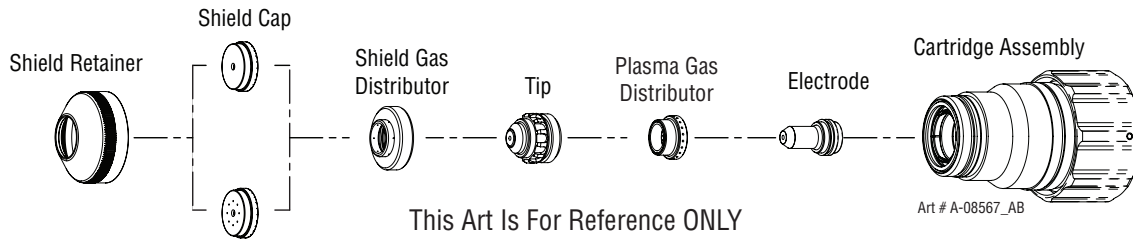
		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O₂)		Shield (Air)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	0.3	10.2	5.1	0.5	11.4	3700	0.2	3.6
15	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	0.4	10.2	5.1	0.5	11.4	3100	0.3	4.3
20	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	0.7	10.2	5.1	0.5	11.4	2430	0.5	4.7
25	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	1.1	10.2	6.2	0.5	11.4	1830	0.9	4.6
30	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	1.4	10.2	7.3	0.5	12.4	1410	1.1	4.8
35	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	2.2	10.2	8.3	0.5	12.7	1080	2.0	5.1
40	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	3.6	10.2		0.5	Edge	810	3.4	5.6
50	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	1.0	Edge Start		0.5	Edge	470	1.0	5.9
60	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	1.0	Edge Start		0.5	Edge	310	1.0	9.4
70	2.0	1.4	100	6.9	NA	6.9	5.1 - 14	1.0	Edge Start		0.5	Edge	220	1.0	11.7

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Use CCM 4.5.0 or later and Electronic Cut Chart 2.4.0 or later

Stainless Steel **300A Bevel Cut** **H35 Plasma / N₂ Shield**

	Flow Rates (SLPM / SCFH)	
	H35	N ₂
	Preflow Cutflow	- / - 74 / 157 44 / 93 51 / 108



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	< 1" / 25 mm 21-1038 ≥ 1" / 25 mm 21-1039	21-1284	21-1065	21-1041	21-1091	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.375	0.080	20	120	100	NA	120	0.350 - 0.550	0.2	0.250	0.200	0.4	0.350	85	0.2	0.175
0.500	0.080	20	120	100	NA	120	0.350 - 0.550	0.4	0.250	0.200	0.2	0.350	75	0.4	0.193
0.625	0.080	20	120	100	NA	90	0.350 - 0.550	0.7	0.275	0.250	0.2	0.375	65	0.5	0.197
0.750	0.080	20	120	100	NA	90	0.350 - 0.550	0.9	0.275	0.250	0.2	0.375	55	0.6	0.195
0.875	0.080	20	120	100	NA	90	0.350 - 0.550	1.1	0.275	0.250	0.2	0.375	45	0.7	0.210
1.000	0.080	20	120	100	NA	120	0.350 - 0.550	1.6	0.400	0.400	0.2	0.500	35	0.9	0.226
1.250	0.080	20	120	100	NA	120	0.400 - 0.550	1.8	0.400	0.400	0.2	0.700	30	1.0	0.203
1.500	0.080	20	120	100	NA	120	0.400 - 0.550	0.5	Edge Start		0.2	Edge	25	0.5	0.220
1.750	0.080	20	120	100	NA	120	0.400 - 0.550	0.5	Edge Start		0.2	Edge	21	0.5	0.229
2.000	0.080	20	120	100	NA	120	0.400 - 0.550	0.5	Edge Start		0.2	Edge	17	0.5	0.237

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	2.0	1.4	120	6.9	NA	8.3	8.9 - 14	0.2	6.4	5.1	0.4	8.9	2120	0.2	4.5
12	2.0	1.4	120	6.9	NA	8.3	8.9 - 14	0.4	6.4	5.1	0.2	8.9	1960	0.4	4.8
15	2.0	1.4	120	6.9	NA	6.8	8.9 - 14	0.6	6.8	6.0	0.2	9.3	1720	0.5	5.0
20	2.0	1.4	120	6.9	NA	6.2	8.9 - 14	1.0	7.0	6.4	0.2	9.5	1320	0.6	5.1
25	2.0	1.4	120	6.9	NA	8.0	8.9 - 14	1.5	9.8	9.7	0.2	12.3	920	0.9	5.7
30	2.0	1.4	120	6.9	NA	8.3	9.8 - 14	1.7	10.2	10.2	0.2	16.4	800	1.0	5.3
35	2.0	1.4	120	6.9	NA	8.3	10.8 - 14	1.9	10.2	10.2	0.2	20.4	700	1.1	4.9
40	2.0	1.4	120	6.9	NA	8.3	10.2 - 14	0.5	Edge Start		0.2	Edge	600	0.5	5.7
45	2.0	1.4	120	6.9	NA	8.3	10.2 - 14	0.5	Edge Start		0.2	Edge	520	0.5	5.8
50	2.0	1.4	120	6.9	NA	8.3	10.2 - 14	0.5	Edge Start		0.2	Edge	440	0.5	6.0

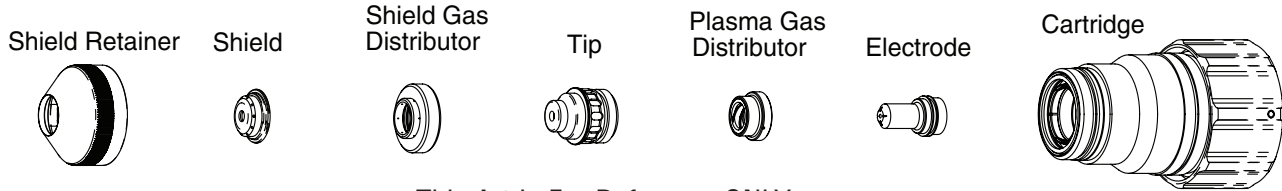
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

300A Bevel Cut

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	23 / 48	8 / 30
	63 / 134	8 / 30



This Art Is For Reference ONLY

Art # A-08552

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1046	21-1284	21-1066	21-1043	21-1089	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.375	0.080	20	120	100	8	55	0.150 - 0.550	0.3	0.250	0.200	0.2	0.350	140	0.3	0.144
0.500	0.080	20	120	100	8	55	0.150 - 0.550	0.5	0.250	0.200	0.2	0.350	100	0.5	0.154
0.625	0.080	20	120	100	8	55	0.150 - 0.550	0.8	0.250	0.200	0.2	0.350	75	0.6	0.153
0.750	0.080	20	120	100	8	55	0.200 - 0.550	0.9	0.400	0.300	0.2	0.500	55	0.7	0.173
0.875	0.080	20	120	100	8	55	0.300 - 0.550	1.8	0.400	0.300	0.2	0.500	45	1.1	0.210
1.000	0.080	20	120	100	8	55	0.300 - 0.550	2.1	0.400	0.300	0.2	0.500	40	1.3	0.210
1.250	0.080	20	120	100	8	55	0.350 - 0.550	3.5	0.400	0.300	0.2	0.500	30	2.0	0.230
1.500	0.080	20	120	100	8	55	0.350 - 0.550	1.0	Edge Start		0.2	Edge	25	1.0	0.232
1.750	0.080	20	120	100	8	55	0.350 - 0.550	1.0	Edge Start		0.2	Edge	18	1.0	0.237
2.000	0.080	20	120	100	8	55	0.350 - 0.550	1.0	Edge Start		0.2	Edge	12	1.0	0.253

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	2.0	1.4	120	6.9	8	3.8	3.8 - 14	0.3	6.4	5.1	0.2	8.9	3400	0.3	3.7
12	2.0	1.4	120	6.9	8	3.8	3.8 - 14	0.5	6.4	5.1	0.2	8.9	2760	0.5	3.9
15	2.0	1.4	120	6.9	8	3.8	3.8 - 14	0.7	6.4	5.1	0.2	8.9	2080	0.6	3.9
20	2.0	1.4	120	6.9	8	3.8	5.8 - 14	1.2	10.2	7.6	0.2	12.7	1320	0.8	4.7
25	2.0	1.4	120	6.9	8	3.8	7.6 - 14	2.1	10.2	7.6	0.2	12.7	1030	1.3	5.3
30	2.0	1.4	120	6.9	8	3.8	8.5 - 14	3.1	10.2	7.6	0.2	12.7	830	1.8	5.7
35	2.0	1.4	120	6.9	8	3.8	8.9 - 14	1.0	Edge Start		0.2	Edge	720	1.0	5.8
40	2.0	1.4	120	6.9	8	3.8	8.9 - 14	1.0	Edge Start		0.2	Edge	580	1.0	5.9
50	2.0	1.4	120	6.9	8	3.8	8.9 - 14	1.0	Edge Start		0.2	Edge	320	1.0	6.4

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

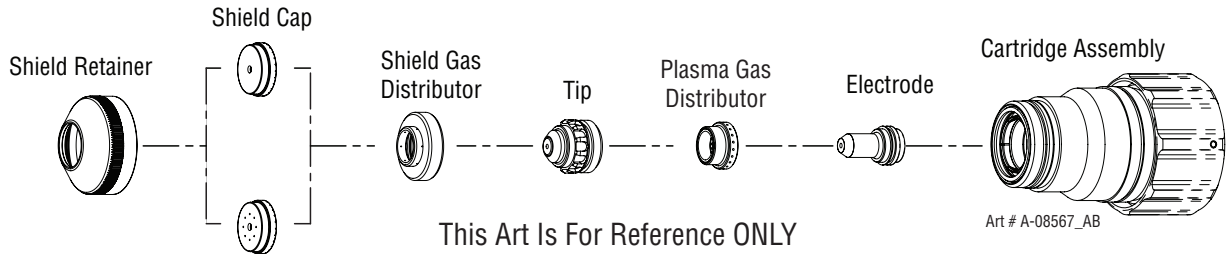
Note 2: Water source used for shield must be demineralized.

Aluminum

300A Bevel Cut

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	74 / 156
Cutflow	44 / 93	51 / 107



Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	< 1" / 25 mm 21-1038 ≥ 1" / 25 mm 21-1039	21-1284	21-1065	21-1041	21-1091	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.250	0.080	20	120	100	NA	120	0.400 - 0.450	0.1	0.300	0.250	0.5	0.400	300	0.1	0.182
0.375	0.080	20	120	100	NA	120	0.400 - 0.450	0.2	0.300	0.250	0.4	0.400	275	0.2	0.186
0.500	0.080	20	120	100	NA	120	0.300 - 0.450	0.4	0.300	0.250	0.3	0.400	210	0.3	0.174
0.625	0.080	20	120	100	NA	90	0.300 - 0.450	0.6	0.250	0.300	0.2	0.350	140	0.4	0.169
0.750	0.080	20	120	100	NA	90	0.300 - 0.450	0.8	0.250	0.300	0.2	0.350	110	0.5	0.172
0.875	0.080	20	120	100	NA	90	0.300 - 0.450	1.0	0.300	0.250	0.2	0.400	95	0.6	0.183
1.000	0.080	20	120	100	NA	120	0.350 - 0.450	1.2	0.350	0.300	0.2	0.450	85	0.7	0.190
1.250	0.080	20	120	100	NA	120	0.400 - 0.450	1.6	0.400	0.400	0.2	0.500	60	0.8	0.205
1.500	0.080	20	120	100	NA	120	0.400 - 0.450	1.5	Edge Start	0.2	Edge	45	1.0	0.215	
1.750	0.080	20	120	100	NA	120	0.400 - 0.450	0.4	Edge Start	0.2	Edge	35	0.4	0.226	
2.000	0.080	20	120	100	NA	120	0.400 - 0.450	0.4	Edge Start	0.2	Edge	25	0.4	0.215	

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
6	2.0	1.4	120	6.9	NA	8.3	10.2 - 11.4	0.1	7.6	6.4	0.5	10.2	7690	0.1	4.6
8	2.0	1.4	120	6.9	NA	8.3	10.2 - 11.4	0.2	7.6	6.4	0.4	10.2	7290	0.2	4.7
10	2.0	1.4	120	6.9	NA	8.3	9.8 - 11.4	0.2	7.6	6.4	0.4	10.2	6740	0.2	4.7
12	2.0	1.4	120	6.9	NA	8.3	8.2 - 11.4	0.4	7.6	6.4	0.3	10.2	5700	0.3	4.5
15	2.0	1.4	120	6.9	NA	6.8	7.6 - 11.4	0.5	6.7	7.3	0.2	9.2	4050	0.4	4.3
20	2.0	1.4	120	6.9	NA	6.2	7.6 - 11.4	0.9	6.7	7.2	0.2	9.3	2680	0.5	4.5
25	2.0	1.4	120	6.9	NA	8.0	8.7 - 11.4	1.2	8.7	7.5	0.2	11.3	2190	0.7	4.8
30	2.0	1.4	120	6.9	NA	8.3	9.8 - 11.4	1.5	9.8	9.5	0.2	12.4	1700	0.8	5.1
35	2.0	1.4	120	6.9	NA	8.3	10.2 - 11.4	1.5	Edge Start		0.2	Edge	1270	1.0	5.3
40	2.0	1.4	120	6.9	NA	8.3	10.2 - 11.4	1.2	Edge Start		0.2	Edge	1070	0.8	5.5
50	2.0	1.4	120	6.9	NA	8.3	10.2 - 11.4	0.4	Edge Start		0.2	Edge	670	0.4	5.5

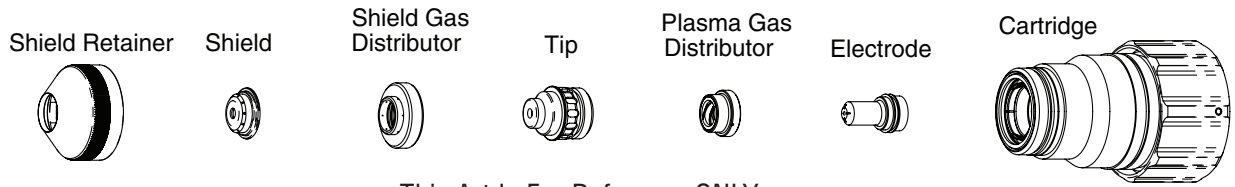
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum

300A Bevel Cut

N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
	Preflow	Cutflow
	23 / 48	8 / 30
	63 / 134	8 / 30



This Art Is For Reference ONLY

Art # A-08552

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1015	21-1046	21-1284	21-1066	21-1043	21-1089	21-1022

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.500	0.080	20	120	100	8	55	0.200 - 0.450	0.4	0.250	0.150	0.2	0.300	120	0.3	0.161
0.625	0.080	20	120	100	8	55	0.200 - 0.450	0.5	0.250	0.150	0.2	0.300	100	0.4	0.165
0.750	0.080	20	120	100	8	55	0.250 - 0.450	0.9	0.400	0.300	0.2	0.500	80	0.5	0.174
0.875	0.080	20	120	100	8	55	0.250 - 0.450	1.0	0.400	0.300	0.2	0.500	70	0.6	0.175
1.000	0.080	20	120	100	8	55	0.250 - 0.450	1.2	0.400	0.300	0.2	0.500	60	0.7	0.190
1.250	0.080	20	120	100	8	55	0.250 - 0.450	2.2	0.400	0.300	0.2	0.500	40	1.2	0.185
1.500	0.080	20	120	100	8	55	0.300 - 0.450	3.5	Edge Start		0.2	Edge	25	1.6	0.190
1.750	0.080	20	120	100	8	55	0.300 - 0.450	0.6	Edge Start		0.2	Edge	15	0.6	0.213
2.000	0.080	20	120	100	8	55	0.300 - 0.450	0.6	Edge Start		0.2	Edge	10	0.6	0.205

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	2.0	1.4	120	6.9	8	3.8	5.1 - 11.4	0.5	6.4	3.8	0.2	7.6	2680	0.4	4.2
20	2.0	1.4	120	6.9	8	3.8	6.4 - 11.4	0.9	10.2	7.6	0.2	12.7	1960	0.5	4.4
25	2.0	1.4	120	6.9	8	3.8	6.4 - 11.4	1.2	10.2	7.6	0.2	12.7	1560	0.7	4.8
30	2.0	1.4	120	6.9	8	3.8	6.4 - 11.4	1.9	10.2	7.6	0.2	12.7	1160	1.1	4.7
35	2.0	1.4	120	6.9	8	3.8	7.6 - 11.4	3.4	Edge Start		0.2	Edge	760	1.6	4.5
40	2.0	1.4	120	6.9	8	3.8	7.6 - 11.4	2.6	Edge Start		0.2	Edge	560	1.3	5.0
50	2.0	1.4	120	6.9	8	3.8	7.6 - 11.4	0.6	Edge Start		0.2	Edge	270	0.6	5.2

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

Chart is for Customer Settings
Make Copies as Desired

	Flow Rates	
	O ₂ (SLPM / SCFH)	Air (GPH / LPH)
Preflow		
Cutflow		

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

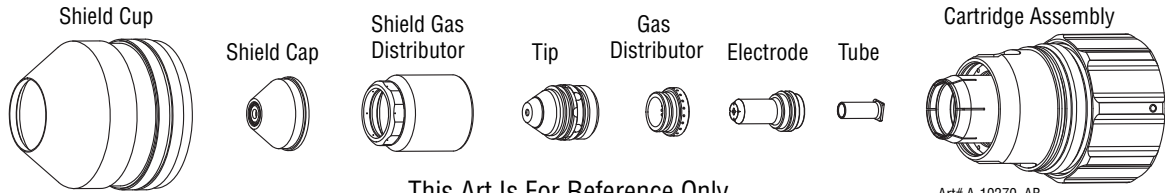
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8.07 Standard Cutting 400 Amp

Mild Steel

400A

O₂ Plasma / Air Shield



This Art Is For Reference Only

Art# A-10270_AB

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	232 / 491
Cutflow	33 / 70	203 / 430

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1304	21-1310	21-1309	21-1042	21-1308 9-7921	21-1300

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (O ₂)		Shield (Air)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	15	80	90	-	80	154	0.200	0.3	0.400	0.200	0.2	Not Recommended without Elevation Height	150	0.2	0.195
-	5/8	0.625	15	80	90	-	80	154	0.200	0.4	0.400	0.300	0.2		130	0.3	0.200
-	3/4	0.750	15	80	90	-	80	154	0.200	0.6	0.400	0.300	0.2		115	0.8	0.215
-	7/8	0.875	15	80	90	-	80	159	0.200	0.9	0.400	0.500	0.2		100	0.9	0.200
-	1	1.000	15	80	90	-	80	161	0.200	1.1	0.400	0.550	0.2		80	0.9	0.200
-	1 1/4	1.250	15	80	90	-	80	162	0.200	1.5	0.400	0.650	0.2		60	1.3	0.220
-	1 1/2	1.500	15	80	90	-	80	166	0.200	4.0	0.450	0.600	0.2		45	2.5	0.230
-	1 3/4	1.750	15	80	90	-	80	169	0.200	4.5	0.450	0.650	0.2		40	4.0	0.225
-	2	2.000	15	80	90	-	80	170	0.200	7.0	0.450	0.750	0.2		30	6.0	0.225
-	2 1/4	2.250	15	80	90	-	80	170	0.200	3.5	Edge Start		0.2		25	3.5	0.235
-	2 1/2	2.500	15	80	90	-	80	181	0.200	3.0	Edge Start		0.2		15	3.0	0.235
-	3	3.000	15	80	90	-	80	193	0.200	3.0	Edge Start		0.2		10	3.0	0.300
-	3 1/2	3.500	15	80	90	-	80	217	0.200	3.0	Edge Start		0.2		4	3.0	0.360

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (O ₂)		Shield (Air)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/ min)	(sec)	(mm)
12	1.0	80	6.2	-	5.5	154	5.1	0.3	10.2	4.5	0.2	Not Recommended without Elevation Height	3920	0.2	4.9
15	1.0	80	6.2	-	5.5	154	5.1	0.4	10.2	6.9	0.2		3440	0.3	5.0
20	1.0	80	6.2	-	5.5	155	5.1	0.7	10.2	9.1	0.2		2810	0.8	5.3
25	1.0	80	6.2	-	5.5	161	5.1	1.1	10.2	13.8	0.2		2100	0.9	5.1
30	1.0	80	6.2	-	5.5	162	5.1	1.4	10.2	15.8	0.2		1660	1.2	5.4
35	1.0	80	6.2	-	5.5	164	5.1	2.8	10.8	15.9	0.2		1330	1.9	5.7
40	1.0	80	6.2	-	5.5	167	5.1	4.1	11.4	15.6	0.2		1110	2.9	5.8
50	1.0	80	6.2	-	5.5	170	5.1	6.7	11.4	18.7	0.2		790	5.7	5.7
60	1.0	80	6.2	-	5.5	175	5.1	3.3	Edge Start		0.2		520	3.3	6.0
70	1.0	80	6.2	-	5.5	187	5.1	3.0	Edge Start		0.2		320	3.0	6.8
80	1.0	80	6.2	-	5.5	200	5.1	3.0	Edge Start		0.2		210	3.0	8.1
90	1.0	80	6.2	-	5.5	219	5.1	3.0	Edge Start		0.2		90	3.0	9.3

Marking 24A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6mm.	Pre Flow Pressure (N ₂)		Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
			Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)		
	15 / 1.0	50	50 / 3.4	NA	15 / 1.0	110	0.120 / 3.0	0.120 / 3.0	0	0.5	200 / 5080		

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

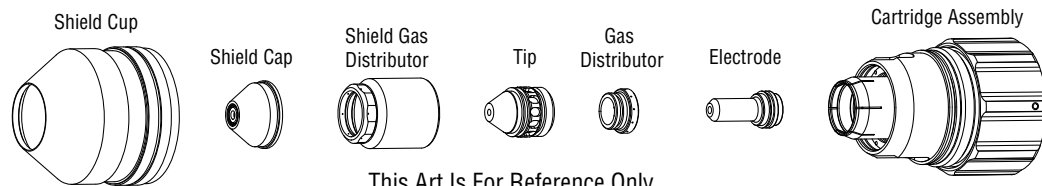
THC Pierce Delay values shown are the minimum values. It is recommended that this value should be increased depending on the application.

Stainless Steel

400A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	207 / 439
Cut-flow	47 / 100	173 / 367



This Art Is For Reference Only

Art# A-10444

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	≤ 1" / 25mm 21-1304 > 1" / 25 mm 21-1307	21-1303	21-1302	21-1306	21-1301	21-1300

			GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control			
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	5/8	0.625	30	120	100	NA	110	155	0.350	0.5	0.400	0.400	0.2	Not Recommended without Elevation Height	70	0.4	0.230
-	3/4	0.750	30	120	100	NA	110	157	0.350	0.6	0.400	0.400	0.2		60	0.5	0.230
-	1	1.000	30	120	100	NA	110	161	0.350	1.0	0.400	0.500	0.2		45	0.8	0.236
-	1 1/4	1.250	30	120	100	NA	110	163	0.350	1.5	0.400	0.500	0.2		35	1.2	0.235
-	1 1/2	1.500	30	120	100	NA	110	165	0.350	1.8	0.400	0.500	0.2		28	1.3	0.248
-	1 3/4	1.750	30	120	100	NA	110	167	0.350	5.0	0.400	0.750	0.2		20	2.5	0.257
-	2	2.000	30	120	100	NA	110	171	0.350	10.0	0.400	0.750	0.2		17	5.5	0.268
-	2 1/4	2.250	30	120	100	NA	110	175	0.350	3.0	Edge Start		0.2		12	3.0	0.265
-	2 1/2	2.500	30	120	100	NA	110	170	0.350	3.0	Edge Start		0.2		14	3.0	0.260
-	3	3.000	30	120	100	NA	110	177	0.350	3.0	Edge Start		0.2		10	3.0	0.275
-	3 1/2	3.500	30	120	100	NA	110	195	0.350	3.0	Edge Start		0.2		5	3.0	0.280
-	4	4.000	30	120	100	NA	110	210	0.350	4.0	Edge Start		0.2		3.5	4.0	0.290

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (H35)		Shield (N ₂)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
15	2.1	120	6.9	NA	7.6	154	8.9	0.5	10.2	10.2	0.2	Not Recommended without Elevation Height	1850	0.4	5.8	
20	2.1	120	6.9	NA	7.6	158	8.9	0.7	10.2	10.5	0.2		1470	0.5	5.9	
25	2.1	120	6.9	NA	7.6	161	8.9	1.0	10.2	12.5	0.2		1170	0.8	6.0	
30	2.1	120	6.9	NA	7.6	162	8.9	1.4	10.2	12.7	0.2		960	1.1	6.0	
35	2.1	120	6.9	NA	7.6	164	8.9	1.7	10.2	12.7	0.2		800	1.3	6.1	
40	2.1	120	6.9	NA	7.6	166	8.9	2.8	10.2	14.6	0.2		650	1.7	6.4	
50	2.1	120	6.9	NA	7.6	170	8.9	9.4	10.2	19.1	0.2		440	5.1	6.8	
60	2.1	120	6.9	NA	7.6	173	8.9	3.0	Edge Start		0.2		330	3.0	6.7	
70	2.1	120	6.9	NA	7.6	174	8.9	3.0	Edge Start		0.2		300	3.0	6.8	
80	2.1	120	6.9	NA	7.6	182	8.9	3.0	Edge Start		0.2		220	3.0	7.0	
90	2.1	120	6.9	NA	7.6	196	8.9	3.1	Edge Start		0.2	120	3.1	7.1		
100	2.1	120	6.9	NA	7.6	208	8.9	3.9	Edge Start		0.2	90	3.9	7.3		

Marking	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures		Arc Voltage	Marking Height	Pierce Ignition Height		THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
50A Arc Current	(psi) / (Bar)	Plasma (N ₂)	Shield (N ₂)			(in) ±0.005 / (mm) ±0.1	(sec)				
		Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/min)	
	15 / 1.0	80	80 / 5.5	NA	20 / 1.4	91	0.120 / 3.0	0	0.4	100 / 2540	

BOLD TYPE indicates maximum piercing parameters. BOLD ITALIC indicates edge starts only.

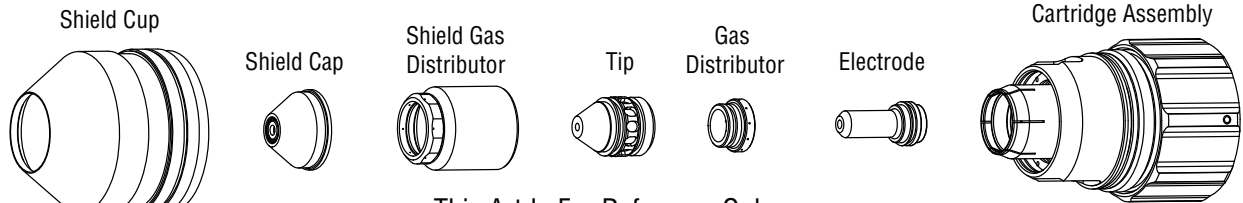
Note 1: For best results when cutting 4" or 100mm Stainless Steel, H35 can be used for both Plasma and Shield gas.

Stainless Steel

400A

H17 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H17	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



This Art Is For Reference Only

Art# A-10444

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1304	21-1303	21-1302	21-1306	21-1301	21-1300

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H17)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	30	120	100	NA	100	141	0.180	0.4	0.375	0.000	0.2	Not Recommended without Elevation Height	105	0.4	0.205
-	5/8	0.625	30	120	100	NA	100	147	0.200	0.6	0.375	0.300	0.2		90	0.6	0.200
-	3/4	0.750	30	120	100	NA	100	150	0.200	1.0	0.375	0.300	0.2		70	0.7	0.210
-	1	1.000	30	120	100	NA	100	152	0.200	1.5	0.375	0.300	0.2		50	1.2	0.212
-	1 1/4	1.250	30	120	100	NA	100	164	0.300	2.0	0.375	0.400	0.2		38	1.4	0.235
-	1 1/2	1.500	30	120	100	NA	100	164	0.300	2.8	0.375	0.500	0.2		30	2.0	0.245
-	1 3/4	1.750	30	120	100	NA	100	170	0.300	5.0	0.375	0.750	0.2		21	3.0	0.255
-	2	2.000	30	120	100	NA	100	179	0.300	8.0	0.375	0.750	0.2		17	5.5	0.280

		GCM-2010				SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H17)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	2.1	120	6.9	NA	6.9	140	4.5	0.4	9.5	0.0	0.2	Not Recommended without Elevation Height	2750	0.4	5.2
15	2.1	120	6.9	NA	6.9	145	4.9	0.5	9.5	5.5	0.2		2390	0.5	5.1
20	2.1	120	6.9	NA	6.9	150	5.1	1.1	9.5	7.6	0.2		1700	0.8	5.3
25	2.1	120	6.9	NA	6.9	152	5.1	1.5	9.5	7.6	0.2		1300	1.2	5.4
30	2.1	120	6.9	NA	6.9	161	6.9	1.9	9.5	9.5	0.2		1050	1.3	5.8
35	2.1	120	6.9	NA	6.9	164	7.6	2.4	9.5	11.5	0.2		860	1.7	6.1
40	2.1	120	6.9	NA	6.9	166	7.6	3.5	9.5	14.6	0.2		690	2.3	6.3
45	2.1	120	6.9	NA	6.9	171	7.6	5.3	9.5	19.1	0.2		520	3.2	6.5
50	2.1	120	6.9	NA	6.9	178	7.6	7.6	9.5	19.1	0.2		440	5.2	7.0

Marking 50A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures			Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.	
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)		(ipm) / (mm/ min)
	15 / 1.0	80	100 / 6.9	NA	100 / 6.9	135	0.120 / 3.0	0.120 / 3.0	0	0.4		0 / 0

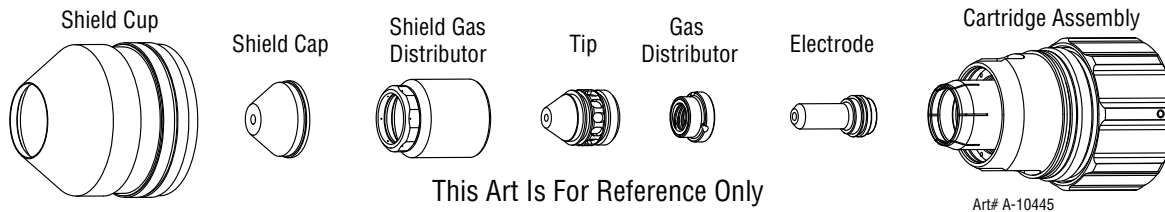
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

400A

N₂ Plasma / H₂O Shield

Flow Rates		
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	22 / 47	8 / 30
Cutflow	72 / 153	8 / 30



This Art Is For Reference Only

Art# A-10445

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1501	21-1500	21-1302	21-1043	21-1502	21-1300

Material Thickness			GCM-2010						SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (N ₂)	Shield (H ₂ O)												
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/8	0.375	17	150	119	8	NA	163	0.200	0.4	0.400	0.300	0.2	Not Recommended without Elevation Height	150	0.3	0.132
-	1/2	0.500	17	150	119	8	NA	164	0.200	0.6	0.450	0.300	0.2		130	0.4	0.200
-	5/8	0.625	17	150	119	8	NA	164	0.200	0.8	0.450	0.400	0.2		110	0.6	0.200
-	3/4	0.750	17	150	119	8	NA	166	0.200	1.2	0.450	0.400	0.2		90	0.7	0.200
-	1	1.000	17	150	119	8	NA	171	0.200	2.0	0.450	0.400	0.2		75	1.0	0.230
-	1 1/4	1.250	17	150	119	8	NA	179	0.250	2.5	0.450	0.450	0.2		40	1.5	0.230
-	1 1/2	1.500	17	150	119	8	NA	184	0.250	3.0	0.450	0.500	0.2		30	2.3	0.240
-	1 3/4	1.750	17	150	119	8	NA	193	0.300	3.5	0.450	0.500	0.2		25	2.7	0.245
-	2	2.000	17	150	119	8	NA	201	0.300	4.0	Edge Start		0.2		17	4.0	0.245

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N₂)		Shield (H₂O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	1.2	150	8.2	8	NA	163	5.1	0.4	10.4	7.6	0.2	Not Recommended without Elevation Height	3730	0.3	3.6
12	1.2	150	8.2	8	NA	164	5.1	0.6	11.2	7.6	0.2		3410	0.4	4.7
15	1.2	150	8.2	8	NA	164	5.1	0.7	11.4	9.5	0.2		2930	0.5	5.1
20	1.2	150	8.2	8	NA	167	5.1	1.3	11.4	10.2	0.2		2230	0.7	5.2
25	1.2	150	8.2	8	NA	171	5.1	1.9	11.4	10.2	0.2		1930	1.0	5.8
30	1.2	150	8.2	8	NA	177	6.0	2.4	11.4	11.1	0.2		1260	1.4	5.8
40	1.2	150	8.2	8	NA	187	6.7	3.1	11.4	12.7	0.2		720	2.4	6.1
50	1.2	150	8.2	8	NA	200	7.6	3.9	Edge Start		0.2		460	3.8	6.2

Marking	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
45A Arc Current		Plasma (N ₂)	Shield (N ₂)									
Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6mm.	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	123	0.400 / 10.2	0.400 / 10.2	0	0	200 / 5080	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

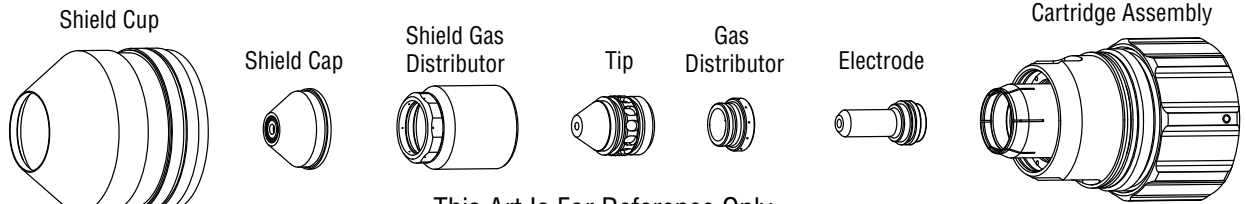
Note 2: Water source used for shield must be demineralized.

Aluminum

400A

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



This Art Is For Reference Only

Art# A-10444

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	≤ 1" / 25 mm 21-1304 > 1" / 25 mm 21-1307	21-1303	21-1302	21-1306	21-1301	21-1300

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	3/4	0.750	30	120	100	NA	100	155	0.350	0.6	0.450	0.400	0.2	Not Recommended without Elevation Height	120	0.4	0.230
-	1	1.000	30	120	100	NA	100	157	0.350	0.7	0.450	0.500	0.2		90	0.5	0.220
-	1 1/4	1.250	30	120	100	NA	100	163	0.350	0.8	0.450	0.500	0.2		80	0.6	0.225
-	1 1/2	1.500	30	120	100	NA	100	167	0.400	1.4	0.500	0.750	0.2		60	1.2	0.235
-	1 3/4	1.750	30	120	100	NA	100	171	0.400	2.2	0.500	0.750	0.2		45	1.8	0.250
-	2	2.000	30	120	100	NA	100	175	0.400	3.8	0.500	0.750	0.2		30	3.2	0.260
-	2 1/4	2.250	30	120	100	NA	100	183	0.400	6.5	0.500	0.750	0.2		20	4.5	0.275
-	2 1/2	2.500	30	120	100	NA	100	189	0.400	3.0	Edge Start		0.2		15	3.0	0.280
-	3	3.000	30	120	100	NA	100	198	0.400	3.0	Edge Start		0.2		10	3.0	0.290
-	3 1/2	3.500	30	120	100	NA	100	213	0.400	3.0	Edge Start		0.2		5	3.0	0.325

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H35)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
20	2.1	120	6.9	NA	6.9	155	8.9	0.6	11.4	10.5	0.2	Not Recommended without Elevation Height	2930	0.4	5.8
25	2.1	120	6.9	NA	6.9	157	8.9	0.7	11.4	12.5	0.2		2330	0.5	5.6
30	2.1	120	6.9	NA	6.9	161	8.9	0.8	11.4	12.7	0.2		2100	0.6	5.7
35	2.1	120	6.9	NA	6.9	165	9.5	1.1	12.1	16.0	0.2		1770	0.9	5.8
40	2.1	120	6.9	NA	6.9	168	10.2	1.6	12.7	19.1	0.2		1410	1.4	6.1
50	2.1	120	6.9	NA	6.9	174	10.2	3.6	12.7	19.1	0.2		810	3.0	6.6
60	2.1	120	6.9	NA	6.9	187	10.2	3.0	Edge Start		0.2		420	3.0	7.0
70	2.1	120	6.9	NA	6.9	194	10.2	3.0	Edge Start		0.2		320	3.0	7.2
80	2.1	120	6.9	NA	6.9	202	10.2	3.0	Edge Start		0.2		220	3.0	7.6
90	2.1	120	6.9	NA	6.9	214	10.2	3.0	Edge Start		0.2		120	3.0	8.3

Marking 50A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/min)	
	15 / 1.0	80	80 / 5.5	NA	20 / 1.4	92	0.200 / 5.1	0.120 / 3.0	0	0.4	100 / 2540	

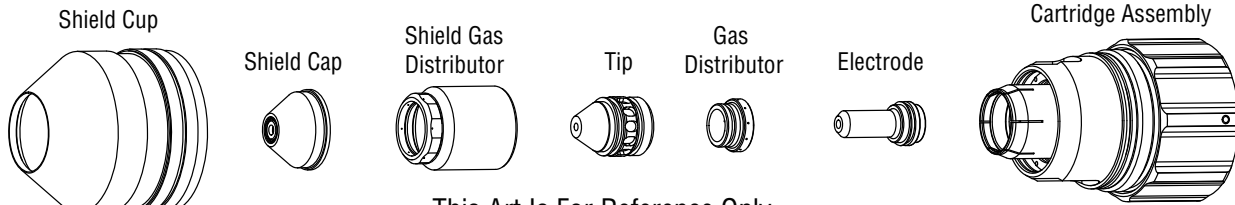
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum

400A

H17 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H17	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



This Art Is For Reference Only

Art# A-10444

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	≤ 1" / 25 mm 21-1304 > 1" / 25 mm 21-1307	21-1303	21-1302	21-1306	21-1301	21-1300

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H17)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
-	1/2	0.500	30	120	100	NA	100	148	0.200	0.3	0.350	0.250	0.4	Not Recommended without Elevation Height	200	0.4	0.195
-	5/8	0.625	30	120	100	NA	100	149	0.200	0.3	0.350	0.250	0.4		180	0.3	0.200
-	3/4	0.750	30	120	100	NA	100	149	0.200	0.6	0.350	0.250	0.4		150	0.4	0.200
-	1	1.000	30	120	100	NA	100	165	0.350	0.7	0.350	0.250	0.4		100	0.5	0.230
-	1 1/4	1.250	30	120	100	NA	100	171	0.350	0.8	0.350	0.300	0.4		80	0.6	0.230
-	1 1/2	1.500	30	120	100	NA	100	167	0.350	1.4	0.350	0.300	0.4		60	1.2	0.240
-	1 3/4	1.750	30	120	100	NA	100	177	0.400	3.0	0.350	0.500	0.4		45	2.0	0.275
-	2	2.000	30	120	100	NA	100	181	0.400	5.5	0.350	0.700	0.4		35	4.5	0.285
-	2 1/4	2.250	30	120	100	NA	100	189	0.400	2.0	Edge Start		0.4		20	2.0	0.310
-	2 1/2	2.500	30	120	100	NA	100	208	0.400	3.0	Edge Start		0.4		10	3.0	0.325

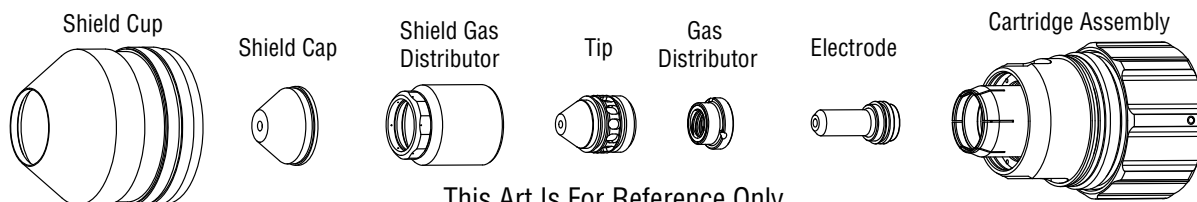
	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (H17)		Shield (N ₂)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	2.1	120	6.9	NA	6.9	149	5.1	0.3	8.9	6.4	0.4	Not Recommended without Elevation Height	4710	0.3	5.0
20	2.1	120	6.9	NA	6.9	151	5.7	0.6	8.9	6.4	0.4		3620	0.4	5.2
25	2.1	120	6.9	NA	6.9	164	8.7	0.7	8.9	6.4	0.4		2620	0.5	5.8
30	2.1	120	6.9	NA	6.9	169	8.9	0.8	8.9	7.3	0.4		2170	0.6	5.8
35	2.1	120	6.9	NA	6.9	169	8.9	1.1	8.9	7.6	0.4		1770	0.9	6.0
40	2.1	120	6.9	NA	6.9	170	9.3	1.9	8.9	9.1	0.4		1410	1.4	6.4
50	2.1	120	6.9	NA	6.9	180	10.2	5.2	8.9	17.1	0.4		920	4.2	7.2
60	2.1	120	6.9	NA	6.9	198	10.2	2.4	Edge Start		0.4		390	2.4	8.0

Marking 50A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6 mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	80 / 5.5	NA	20 / 1.4	92	0.200 / 5.1	0.120 / 3.0	0	0.4	100 / 2540	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum 400A N₂ Plasma / H₂O Shield

Flow Rates		
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	22 / 47	8 / 30
Cutflow	72 / 153	8 / 30



This Art Is For Reference Only

Art# A-10445

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1501	21-1500	21-1302	21-1043	21-1502	21-1300

Material Thickness			GCM-2010						SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
			Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
				Plasma (N ₂)		Shield (H ₂ O)												
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)*	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)	
-	1/2	0.500	17	150	119	8	NA	168	0.250	0.3	0.350	0.450	0.2	Not Recommended without Elevation Height	140	0.2	0.185	
-	5/8	0.625	17	150	119	8	NA	177	0.300	0.7	0.450	0.550	0.2		110	0.5	0.195	
-	3/4	0.750	17	150	119	8	NA	180	0.350	0.8	0.450	0.550	0.2		90	0.6	0.195	
-	7/8	0.875	17	150	119	8	NA	180	0.350	0.9	0.450	0.550	0.2		75	0.7	0.215	
-	1	1.000	17	150	119	8	NA	182	0.350	1.2	0.450	0.550	0.2		70	0.9	0.215	
-	1 1/4	1.250	17	150	119	8	NA	190	0.350	1.4	0.450	0.550	0.2		65	1.0	0.215	
-	1 1/2	1.500	17	150	119	8	NA	191	0.350	1.6	0.450	0.550	0.2		55	1.2	0.215	
-	1 3/4	1.750	17	150	119	8	NA	200	0.420	1.8	0.500	0.600	0.2		40	1.4	0.240	
-	2	2.000	17	150	119	8	NA	211	0.420	2.5	0.500	0.600	0.2		30	1.9	0.295	
-	2 1/4	2.250	17	150	119	8	NA	215	0.420	4.8	0.500	0.600	0.2		20	2.2	0.320	
-	2 1/2	2.500	17	150	119	8	NA	222	0.420	3.0	Edge Start		0.2	12	3.0	0.335		

	GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
		Plasma (N₂)		Shield (H₂O)											
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	1.2	150	8.2	8	NA	166	6.1	0.2	8.3	10.9	0.2	Not Recommended without Elevation Height	3720	0.1	4.6
15	1.2	150	8.2	8	NA	175	7.3	0.6	10.7	13.3	0.2		3000	0.4	4.9
20	1.2	150	8.2	8	NA	180	8.9	0.8	11.4	14.0	0.2		2170	0.6	5.1
25	1.2	150	8.2	8	NA	182	8.9	1.2	11.4	14.0	0.2		1790	0.9	5.5
30	1.2	150	8.2	8	NA	188	8.9	1.3	11.4	14.0	0.2		1690	1.0	5.5
35	1.2	150	8.2	8	NA	191	8.9	1.5	11.4	14.0	0.2		1520	1.1	5.5
40	1.2	150	8.2	8	NA	194	9.4	1.7	11.8	14.4	0.2		1280	1.3	5.7
50	1.2	150	8.2	8	NA	210	10.7	2.4	12.7	15.2	0.2		790	1.8	7.3
60	1.2	150	8.2	8	NA	218	10.7	4.0	Edge Start	0.2			420	2.6	8.3

Marking 45A Arc Current Burn-through may happen for thicknesses < 1/16" (0.063") / 1.6mm.	Pre Flow Pressure (N ₂)	Marking Flow Rates / Pressures				Arc Voltage	Marking Height	Pierce Ignition Height	THC and CNC Delay	Control Delay	Travel Speed	Marking quality degrades as thickness decreases.
		Plasma (N ₂)		Shield (N ₂)								
	(psi) / (Bar)	Ball	(psi) / (Bar)	Ball	(psi) / (Bar)	(Volts)	(in) ±0.005 / (mm) ±0.1	(in) ±0.005 / (mm) ±0.1	(sec)	(sec)	(ipm) / (mm/ min)	
	15 / 1.0	80	60 / 4.1	NA	90 / 6.2	105	0.180 / 4.6	0.180 / 4.6	0	0	200 / 5080	

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

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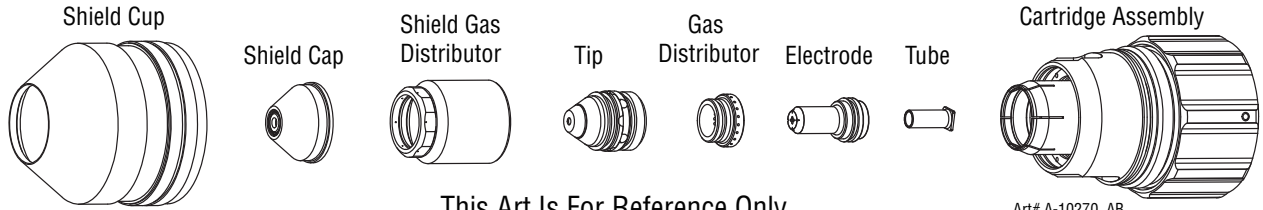
8.08 Robotic and Bevel Cutting 400 Amp

Mild Steel

400A Bevel Cut

O₂ Plasma / Air Shield

Flow Rates (SLPM / SCFH)		
	O ₂	Air
Preflow	- / -	232 / 491
Cutflow	33 / 70	203 / 430



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1304	21-1310	21-1309	21-1042	21-1308 9-7921	21-1300

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.500	0.080	15	80	90	-	80	0.200 - 0.600	0.3	0.400	0.200	0.2	Not Recommended without Elevation Height	150	0.2	0.195
0.625	0.080	15	80	90	-	80	0.200 - 0.600	0.4	0.400	0.300	0.2		130	0.3	0.200
0.750	0.080	15	80	90	-	80	0.200 - 0.600	0.6	0.400	0.300	0.2		115	0.8	0.215
0.875	0.080	15	80	90	-	80	0.200 - 0.600	0.9	0.400	0.500	0.2		100	0.9	0.200
1.000	0.080	15	80	90	-	80	0.200 - 0.600	1.1	0.400	0.550	0.2		80	0.9	0.200
1.250	0.080	15	80	90	-	80	0.200 - 0.600	1.5	0.400	0.650	0.2		60	1.3	0.220
1.500	0.080	15	80	90	-	80	0.200 - 0.600	4.0	0.450	0.600	0.2		45	2.5	0.230
1.750	0.080	15	80	90	-	80	0.200 - 0.600	4.5	0.450	0.650	0.2		40	4.0	0.225
2.000	0.080	15	80	90	-	80	0.200 - 0.600	7.0	0.450	0.750	0.2		30	6.0	0.225
2.250	0.080	15	80	90	-	80	0.200 - 0.600	3.5	Edge Start		0.2		25	3.5	0.235
2.500	0.080	15	80	90	-	80	0.200 - 0.600	3.0	Edge Start		0.2		15	3.0	0.235
3.000	0.080	15	80	90	-	80	0.200 - 0.600	3.0	Edge Start		0.2		10	3.0	0.300
3.500	0.080	15	80	90	-	80	0.200 - 0.600	3.0	Edge Start		0.2		4	3.0	0.360

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (O ₂)		Shield (Air)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	0.3	10.2	4.5	0.2	Not Recommended without Elevation Height	3920	0.2	4.9
15	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	0.4	10.2	6.9	0.2		3440	0.3	5.0
20	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	0.7	10.2	9.1	0.2		2810	0.8	5.3
25	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	1.1	10.2	13.8	0.2		2100	0.9	5.1
30	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	1.4	10.2	15.8	0.2		1660	1.2	5.4
35	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	2.8	10.8	15.9	0.2		1330	1.9	5.7
40	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	4.1	11.4	15.6	0.2		1110	2.9	5.8
50	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	6.7	11.4	18.7	0.2		790	5.7	5.7
60	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	3.3	Edge Start		0.2		520	3.3	6.0
70	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	3.0	Edge Start		0.2		320	3.0	6.8
80	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	3.0	Edge Start		0.2		210	3.0	8.1
90	2.0	1.0	80	6.2	-	5.5	5.1 - 15.2	3.0	Edge Start		0.2		90	3.0	9.3

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

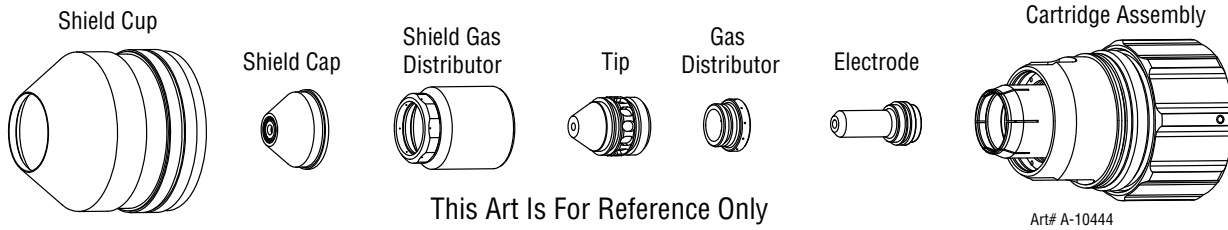
Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

THC Pierce Delay values shown are the minimum values. It is recommended that this value should be increased depending on the application.

Stainless Steel 400A Bevel Cut H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	≤ 1" / 25 mm 21-1304 > 1" / 25 mm 21-1307	21-1303	21-1302	21-1306	21-1301	21-1300

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.625	0.080	30	120	100	NA	110	0.350 - 0.600	0.5	0.400	0.400	0.2	Not Recommended without Elevation Height	70	0.4	0.230
0.750	0.080	30	120	100	NA	110	0.350 - 0.600	0.6	0.400	0.400	0.2		60	0.5	0.230
1.000	0.080	30	120	100	NA	110	0.350 - 0.600	1.0	0.400	0.500	0.2		45	0.8	0.236
1.250	0.080	30	120	100	NA	110	0.350 - 0.600	1.5	0.400	0.500	0.2		35	1.2	0.235
1.500	0.080	30	120	100	NA	110	0.350 - 0.600	1.8	0.400	0.500	0.2		28	1.3	0.248
1.750	0.080	30	120	100	NA	110	0.350 - 0.600	5.0	0.400	0.750	0.2		20	2.5	0.257
2.000	0.080	30	120	100	NA	110	0.350 - 0.600	10.0	0.400	0.750	0.2		17	5.5	0.268
2.250	0.080	30	120	100	NA	110	0.350 - 0.600	3.0	Edge Start		0.2		12	3.0	0.265
2.500	0.080	30	120	100	NA	110	0.350 - 0.600	3.0	Edge Start		0.2		14	3.0	0.260
3.000	0.080	30	120	100	NA	110	0.350 - 0.600	3.0	Edge Start		0.2		10	3.0	0.275
3.500	0.080	30	120	100	NA	110	0.350 - 0.600	3.0	Edge Start		0.2		5	3.0	0.280
4.000	0.080	30	120	100	NA	110	0.350 - 0.600	4.0	Edge Start		0.2		4	4.0	0.290

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	0.5	10.2	10.2	0.2	Not Recommended without Elevation Height	1850	0.4	5.8
20	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	0.7	10.2	10.5	0.2		1470	0.5	5.9
25	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	1.0	10.2	12.5	0.2		1170	0.8	6.0
30	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	1.4	10.2	12.7	0.2		960	1.1	6.0
35	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	1.7	10.2	12.7	0.2		800	1.3	6.1
40	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	2.8	10.2	14.6	0.2		650	1.7	6.4
50	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	9.4	10.2	19.1	0.2		440	5.1	6.8
60	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	3.0	Edge Start		0.2		330	3.0	6.7
70	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	3.0	Edge Start		0.2		300	3.0	6.8
80	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	3.0	Edge Start		0.2		220	3.0	7.0
90	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	3.1	Edge Start		0.2		120	3.1	7.1
100	2.0	2.1	120	6.9	NA	7.6	8.9 - 15.2	3.9	Edge Start		0.2		90	3.9	7.3

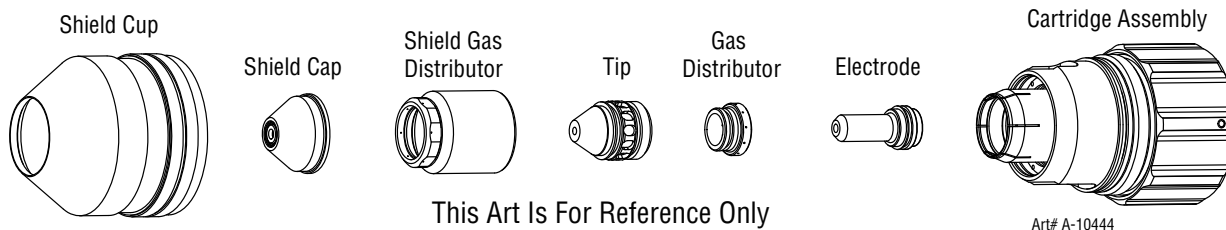
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel

400A Bevel Cut

H17 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H17	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1304	21-1303	21-1302	21-1306	21-1301	21-1300

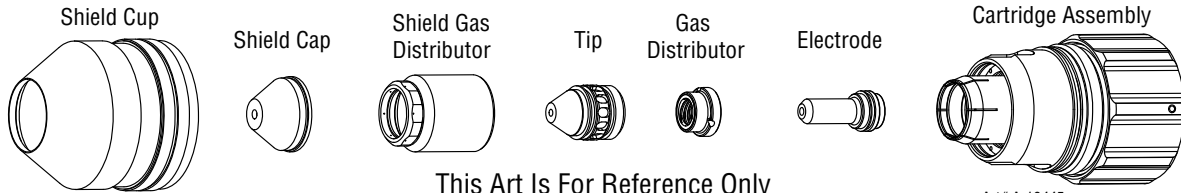
		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H17)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
1/2	0.080	30	120	100	NA	100	0.180 - 0.600	0.4	0.375	0.000	0.2	Not Recommended without Elevation Height	105	0.4	0.205
5/8	0.080	30	120	100	NA	100	0.200 - 0.600	0.6	0.375	0.300	0.2		90	0.6	0.200
3/4	0.080	30	120	100	NA	100	0.200 - 0.600	1.0	0.375	0.300	0.2		70	0.7	0.210
1	0.080	30	120	100	NA	100	0.200 - 0.600	1.5	0.375	0.300	0.2		50	1.2	0.212
1 1/4	0.080	30	120	100	NA	100	0.300 - 0.600	2.0	0.375	0.400	0.2		38	1.4	0.235
1 1/2	0.080	30	120	100	NA	100	0.300 - 0.600	2.8	0.375	0.500	0.2		30	2.0	0.245
1.750	0.080	30	120	100	NA	100	0.300 - 0.600	5.0	0.375	0.750	0.2		21	3.0	0.255
2.000	0.080	30	120	100	NA	100	0.300 - 0.600	8.0	0.375	0.750	0.2		17	5.5	0.280

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H17)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	2.0	2.1	120	6.9	NA	6.9	4.5 - 15.2	0.4	9.5	0.0	0.2	Not Recommended without Elevation Height	2750	0.4	5.2
15	2.0	2.1	120	6.9	NA	6.9	4.9 - 15.2	0.5	9.5	5.5	0.2		2390	0.5	5.1
20	2.0	2.1	120	6.9	NA	6.9	5.1 - 15.2	1.1	9.5	7.6	0.2		1700	0.8	5.3
25	2.0	2.1	120	6.9	NA	6.9	5.1 - 15.2	1.5	9.5	7.6	0.2		1300	1.2	5.4
30	2.0	2.1	120	6.9	NA	6.9	6.9 - 15.2	1.9	9.5	9.5	0.2		1050	1.3	5.8
35	2.0	2.1	120	6.9	NA	6.9	7.6 - 15.2	2.4	9.5	11.5	0.2		860	1.7	6.1
40	2.0	2.1	120	6.9	NA	6.9	7.6 - 15.2	3.5	9.5	14.6	0.2		690	2.3	6.3
45	2.0	2.1	120	6.9	NA	6.9	7.6 - 15.2	5.3	9.5	19.1	0.2		520	3.2	6.5
50	2.0	2.1	120	6.9	NA	6.9	7.6 - 15.2	7.6	9.5	19.1	0.2		440	5.2	7.0

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Stainless Steel 400A Bevel Cut N₂ Plasma / H₂O Shield

Flow Rates		
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	22 / 47	8 / 30
Cutflow	72 / 153	8 / 30



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1501	21-1500	21-1302	21-1043	21-1502	21-1300

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N₂)		Shield (H₂O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.375	0.080	17	150	119	8	NA	0.200 - 0.600	0.4	0.400	0.300	0.2	Not Recommended without Elevation Height	150	0.3	0.132
0.500	0.080	17	150	119	8	NA	0.200 - 0.600	0.6	0.450	0.300	0.2		130	0.4	0.200
0.625	0.080	17	150	119	8	NA	0.200 - 0.600	0.8	0.450	0.400	0.2		110	0.6	0.200
0.750	0.080	17	150	119	8	NA	0.200 - 0.600	1.2	0.450	0.400	0.2		90	0.7	0.200
1.000	0.080	17	150	119	8	NA	0.200 - 0.600	2.0	0.450	0.400	0.2		75	1.0	0.230
1.250	0.080	17	150	119	8	NA	0.250 - 0.600	2.5	0.450	0.450	0.2		40	1.5	0.230
1.500	0.080	17	150	119	8	NA	0.250 - 0.600	3.0	0.450	0.500	0.2		30	2.3	0.240
1.750	0.080	17	150	119	8	NA	0.300 - 0.600	3.5	0.450	0.500	0.2		25	2.7	0.245
2.000	0.080	17	150	119	8	NA	0.300 - 0.600	4.0	Edge Start		0.2		17	4.0	0.245

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N₂)		Shield (H₂O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
10	2.0	1.2	150	8.2	8	NA	5.1 - 15.2	0.4	10.4	7.6	0.2	Not Recommended without Elevation Height	3730	0.3	3.6
12	2.0	1.2	150	8.2	8	NA	5.1 - 15.2	0.6	11.2	7.6	0.2		3410	0.4	4.7
15	2.0	1.2	150	8.2	8	NA	5.1 - 15.2	0.7	11.4	9.5	0.2		2930	0.5	5.1
20	2.0	1.2	150	8.2	8	NA	5.1 - 15.2	1.3	11.4	10.2	0.2		2230	0.7	5.2
25	2.0	1.2	150	8.2	8	NA	5.1 - 15.2	1.9	11.4	10.2	0.2		1930	1.0	5.8
30	2.0	1.2	150	8.2	8	NA	6.0 - 15.2	2.4	11.4	11.1	0.2		1260	1.4	5.8
40	2.0	1.2	150	8.2	8	NA	6.7 - 15.2	3.1	11.4	12.7	0.2		720	2.4	6.1
50	2.0	1.2	150	8.2	8	NA	7.6 - 15.2	3.9	Edge Start		0.2		460	3.8	6.2

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

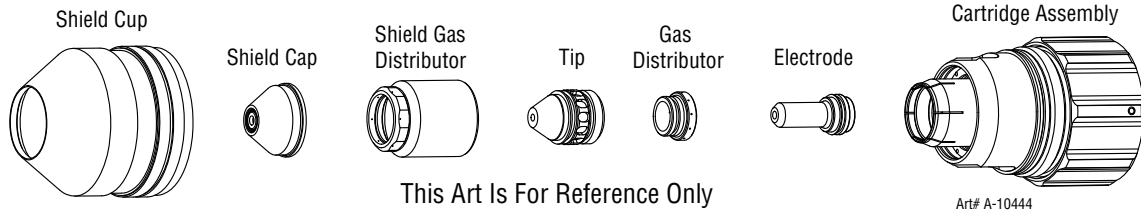
Note 2: Water source used for shield must be demineralized.

Aluminum

400A Bevel Cut

H35 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H35	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	≤ 1" / 25 mm 21-1304 > 1" / 25 mm 21-1307	21-1303	21-1302	21-1306	21-1301	21-1300

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.750	0.080	30	120	100	NA	100	0.350 - 0.600	0.6	0.450	0.400	0.2	Not Recommended without Elevation Height	120	0.4	0.230
1.000	0.080	30	120	100	NA	100	0.350 - 0.600	0.7	0.450	0.500	0.2		90	0.5	0.220
1.250	0.080	30	120	100	NA	100	0.350 - 0.600	0.8	0.450	0.500	0.2		80	0.6	0.225
1.500	0.080	30	120	100	NA	100	0.400 - 0.600	1.4	0.500	0.750	0.2		60	1.2	0.235
1.750	0.080	30	120	100	NA	100	0.400 - 0.600	2.2	0.500	0.750	0.2		45	1.8	0.250
2.000	0.080	30	120	100	NA	100	0.400 - 0.600	3.8	0.500	0.750	0.2		30	3.2	0.260
2.250	0.080	30	120	100	NA	100	0.400 - 0.600	6.5	0.500	0.750	0.2		20	4.5	0.275
2.500	0.080	30	120	100	NA	100	0.400 - 0.600	3.0	Edge Start		0.2		15	3.0	0.280
3.000	0.080	30	120	100	NA	100	0.400 - 0.600	3.0	Edge Start		0.2		10	3.0	0.290
3.500	0.080	30	120	100	NA	100	0.400 - 0.600	3.0	Edge Start		0.2		5	3.0	0.325

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
20	2.0	2.1	120	6.9	NA	6.9	8.9 - 15.2	0.6	11.4	10.5	0.2	Not Recommended without Elevation Height	2930	0.4	5.8
25	2.0	2.1	120	6.9	NA	6.9	8.9 - 15.2	0.7	11.4	12.5	0.2		2330	0.5	5.6
30	2.0	2.1	120	6.9	NA	6.9	8.9 - 15.2	0.8	11.4	12.7	0.2		2100	0.6	5.7
35	2.0	2.1	120	6.9	NA	6.9	9.5 - 15.2	1.1	12.1	16.0	0.2		1770	0.9	5.8
40	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	1.6	12.7	19.1	0.2		1410	1.4	6.1
50	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	3.6	12.7	19.1	0.2		810	3.0	6.6
60	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	3.0	Edge Start		0.2		420	3.0	7.0
70	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	3.0	Edge Start		0.2		320	3.0	7.2
80	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	3.0	Edge Start		0.2		220	3.0	7.6
90	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	3.0	Edge Start		0.2		120	3.0	8.3

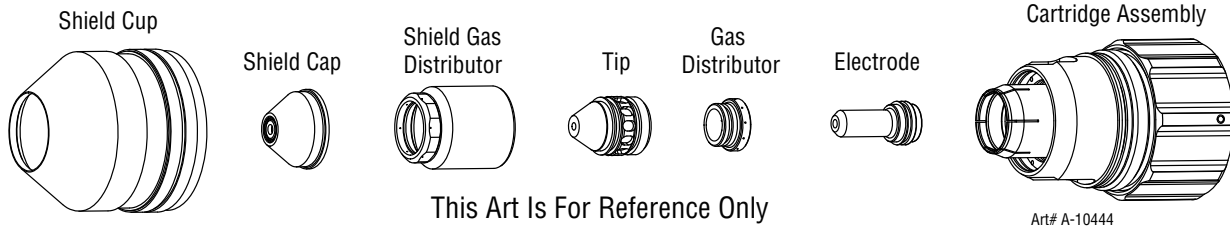
BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum

400A Bevel Cut

H17 Plasma / N₂ Shield

Flow Rates (SLPM / SCFH)		
	H17	N ₂
Preflow	- / -	207 / 439
Cutflow	47 / 100	173 / 367



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	≤ 1" / 25 mm 21-1304 > 1" / 25 mm 21-1307	21-1303	21-1302	21-1306	21-1301	21-1300

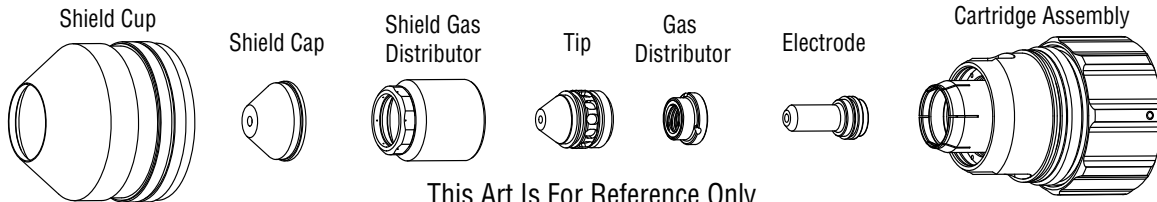
		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H17)		Shield (N ₂)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.500	0.080	30	120	100	NA	100	0.200 - 0.600	0.3	0.350	0.250	0.4	Not Recommended without Elevation Height	200	0.4	0.195
0.625	0.080	30	120	100	NA	100	0.200 - 0.600	0.3	0.350	0.250	0.4		180	0.3	0.200
0.750	0.080	30	120	100	NA	100	0.200 - 0.600	0.6	0.350	0.250	0.4		150	0.4	0.200
1.000	0.080	30	120	100	NA	100	0.350 - 0.600	0.7	0.350	0.250	0.4		100	0.5	0.230
1.250	0.080	30	120	100	NA	100	0.350 - 0.600	0.8	0.350	0.300	0.4		80	0.6	0.230
1.500	0.080	30	120	100	NA	100	0.350 - 0.600	1.4	0.350	0.300	0.4		60	1.2	0.240
1.750	0.080	30	120	100	NA	100	0.400 - 0.600	3.0	0.350	0.500	0.4		45	2.0	0.275
2.000	0.080	30	120	100	NA	100	0.400 - 0.600	5.5	0.350	0.700	0.4		35	4.5	0.285
2.250	0.080	30	120	100	NA	100	0.400 - 0.600	2.0	Edge Start		0.4		20	2.0	0.310
2.500	0.080	30	120	100	NA	100	0.400 - 0.600	3.0	Edge Start		0.4		10	3.0	0.325

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (H17)		Shield (N ₂)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
15	2.0	2.1	120	6.9	NA	6.9	5.1 - 15.2	0.3	8.9	6.4	0.4	Not Recommended without Elevation Height	4710	0.3	5.0
20	2.0	2.1	120	6.9	NA	6.9	5.7 - 15.2	0.6	8.9	6.4	0.4		3620	0.4	5.2
25	2.0	2.1	120	6.9	NA	6.9	8.7 - 15.2	0.7	8.9	6.4	0.4		2620	0.5	5.8
30	2.0	2.1	120	6.9	NA	6.9	8.9 - 15.2	0.8	8.9	7.3	0.4		2170	0.6	5.8
35	2.0	2.1	120	6.9	NA	6.9	8.9 - 15.2	1.1	8.9	7.6	0.4		1770	0.9	6.0
40	2.0	2.1	120	6.9	NA	6.9	9.3 - 15.2	1.9	8.9	9.1	0.4		1410	1.4	6.4
50	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	5.2	8.9	17.1	0.4		920	4.2	7.2
60	2.0	2.1	120	6.9	NA	6.9	10.2 - 15.2	2.4	Edge Start		0.4		390	2.4	8.0

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

Aluminum 400A Bevel Cut N₂ Plasma / H₂O Shield

	Flow Rates	
	N ₂ (SLPM / SCFH)	H ₂ O (GPH / LPH)
Preflow	22 / 47	8 / 30
Cutflow	72 / 153	8 / 30



Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
21-1305	21-1501	21-1500	21-1302	21-1043	21-1502	21-1300

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
inch	(in)	(psi)	Ball	(psi)	Ball	(psi)*	(in)	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
0.500	0.080	17	150	119	8	NA	0.250 - 0.600	0.3	0.350	0.450	0.2	Not Recommended without Elevation Height	140	0.2	0.185
0.625	0.080	17	150	119	8	NA	0.300 - 0.600	0.7	0.450	0.550	0.2		110	0.5	0.195
0.750	0.080	17	150	119	8	NA	0.350 - 0.600	0.8	0.450	0.550	0.2		90	0.6	0.195
0.875	0.080	17	150	119	8	NA	0.350 - 0.600	0.9	0.450	0.550	0.2		75	0.7	0.215
1.000	0.080	17	150	119	8	NA	0.350 - 0.600	1.2	0.450	0.550	0.2		70	0.9	0.215
1.250	0.080	17	150	119	8	NA	0.350 - 0.600	1.4	0.450	0.550	0.2		65	1.0	0.215
1.500	0.080	17	150	119	8	NA	0.350 - 0.600	1.6	0.450	0.550	0.2		55	1.2	0.215
1.750	0.080	17	150	119	8	NA	0.420 - 0.600	1.8	0.500	0.600	0.2		40	1.4	0.240
2.000	0.080	17	150	119	8	NA	0.420 - 0.600	2.5	0.500	0.600	0.2		30	1.9	0.295
2.250	0.080	17	150	119	8	NA	0.420 - 0.600	4.8	0.500	0.600	0.2		20	2.2	0.320
2.500	0.080	17	150	119	8	NA	0.420 - 0.600	3.0	Edge Start		0.2		12	3.0	0.335

		GCM-2010					SC-3000 Torch Height Control (THC)					Basic THC	CNC Control		
Effective Material Thickness	Min. Clearance	Pre Flow Pressure (N2)	Cut Flow Rates / Pressures				Effective Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
			Plasma (N ₂)		Shield (H ₂ O)										
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)*	(mm)	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)
12	2.0	1.2	150	8.2	8	NA	6.1 - 15.2	0.2	8.3	10.9	0.2	Not Recommended without Elevation Height	3720	0.1	4.6
15	2.0	1.2	150	8.2	8	NA	7.3 - 15.2	0.6	10.7	13.3	0.2		3000	0.4	4.9
20	2.0	1.2	150	8.2	8	NA	8.9 - 15.2	0.8	11.4	14.0	0.2		2170	0.6	5.1
25	2.0	1.2	150	8.2	8	NA	8.9 - 15.2	1.2	11.4	14.0	0.2		1790	0.9	5.5
30	2.0	1.2	150	8.2	8	NA	8.9 - 15.2	1.3	11.4	14.0	0.2		1690	1.0	5.5
35	2.0	1.2	150	8.2	8	NA	8.9 - 15.2	1.5	11.4	14.0	0.2		1520	1.1	5.5
40	2.0	1.2	150	8.2	8	NA	9.4 - 15.2	1.7	11.8	14.4	0.2		1280	1.3	5.7
50	2.0	1.2	150	8.2	8	NA	10.7 - 15.2	2.4	12.7	15.2	0.2		790	1.8	7.3
60	2.0	1.2	150	8.2	8	NA	10.7 - 15.2	3.0	Edge Start		0.2		420	2.6	8.3

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

BOLD TYPE indicates maximum piercing parameters.

* Pressure of the water supply line should be regulated by customer pressure regulator.

Note 1: Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

Note 2: Water source used for shield must be demineralized.

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Chart is for Customer Settings
Make Copies as Desired

Flow Rates (SLPM / SCFH)		
H17		N ₂
Preflow		
Cutflow		

			GCM-2010					SC-3000 Torch Height Control (THC)						Basic THC	CNC Control		
Material Thickness			Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed
				Plasma (H17)		Shield (N ₂)											
ga	(in)	inch	(psi)	Ball	(psi)	Ball	(psi)	(Volts)	(in) ±0.005	(sec)	(in)	(in)	(sec)	(in)	(ipm)	(sec)	(in)
														Not Recommended without Elevation Height			

	GCM-2010					SC-3000 Torch Height Control (THC)							Basic THC	CNC Control		
Material Thickness	Pre Flow Pressure (N ₂)	Cut Flow Rates / Pressures				Arc Voltage	Cut Height	THC Pierce Delay	Pierce Ignition Height	Elevation Height	Control Delay	Pierce Height without Elevation	Travel Speed	CNC Motion Delay	Max Kerf Width @ Rec. Speed	
		Plasma (H17)		Shield (N ₂)												
(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	(Volts)	(mm) ±0.1	(sec)	(mm)	(mm)	(sec)	(mm)	(mm/min)	(sec)	(mm)	
												Not Recommended without Elevation Height				

BOLD TYPE indicates maximum piercing parameters. **BOLD ITALIC** indicates edge starts only.

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8.09 Torch Consumables Charts



XT™ High Precision Plasma Torch Ultra-Cut® 30-100 Amps



	Amps	Plasma / Shielded Gas	Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
Mild Steel	15A Robotic	O ₂ Plasma / Air Shield	21-1016	21-1405	21-1404	21-1402	21-1403	21-1400	21-1020
	30A	O ₂ Plasma / Air Shield	21-1016	21-1098	21-1272	21-1097	21-1041	21-1069	21-1020
	30A Robotic	O ₂ Plasma / Air Shield	21-1016	21-1405	21-1404	21-1401	21-1403	21-1400	21-1020
	50A	O ₂ Plasma / Air Shield	21-1016	21-1025	21-1272	21-1051	21-1041	21-1069	21-1020
	70A XTL	O ₂ Plasma / Air Shield	21-1016	21-1026	21-1272	21-1152	21-1041	21-1170	21-1020
	85A	Air Plasma / Air Shield	21-1016	21-1027	21-1272	21-1153	21-1041	21-1071	21-1020
	100A	O ₂ Plasma / Air Shield	21-1016	21-1027	21-1272	21-1153	21-1041	21-1171	21-1020
	100A XTL Robotic	O ₂ Plasma / Air Shield	21-1016	21-1127	21-1278	21-1154	21-1041	21-1172	21-1020

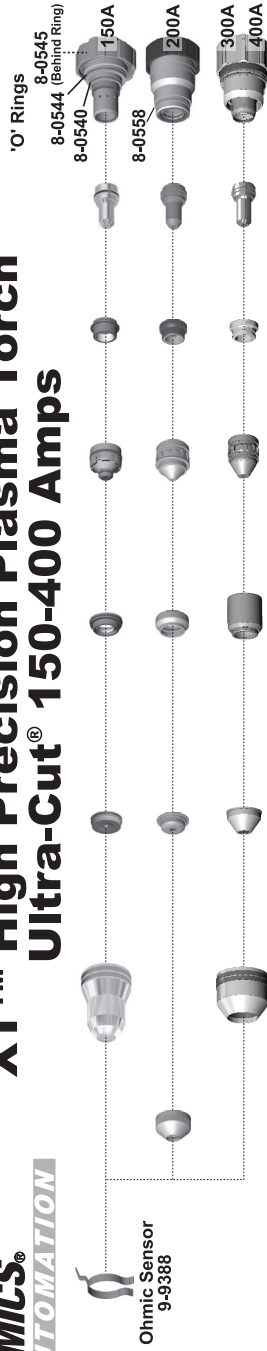
Stainless Steel & Aluminum	30A	Air Plasma / Air Shield	21-1016	21-1033	21-1274	21-1059	21-1045	21-1077	21-1020
		N ₂ Plasma / H ₂ O Shield	21-1016	21-1033	21-1274	21-1059	21-1045	21-1077	21-1020
	50A	Air Plasma / Air Shield	21-1016	21-1034	21-1274	21-1060	21-1041	21-1078	21-1020
		N ₂ Plasma / H ₂ O Shield	21-1016	21-1034	21-1274	21-1060	21-1041	21-1078	21-1020
	70A	Air Plasma / Air Shield	21-1016	21-1035	21-1274	21-1061	21-1041	21-1079	21-1020
		N ₂ Plasma / H ₂ O Shield	21-1016	21-1047	21-1274	21-1064	21-1041	21-1084	21-1020
	100A	H35 Plasma / N ₂ Shield	21-1016	21-1036	21-1274	21-1062	21-1041	21-1080	21-1020
		N ₂ Plasma / H ₂ O Shield	21-1016	21-1036	21-1274	21-1053	21-1041	21-1089	21-1020

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23x5198_AE

Art # A-09621_AC

XT™ High Precision Plasma Torch Ultra-Cut® 150-400 Amps



Amps	Plasma / Shielded Gas	Shield Retainer	Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
Mild Steel	150A	O ₂ Plasma / Air Shield	—	21-1016	21-1028 (≤3/4" (20mm)) 21-1275 (>3/4" (20mm))	21-1054	21-1042	21-1072	21-1020
	200A	O ₂ Plasma / Air Shield	21-1014	21-1017	21-1030	21-1055	21-1042	21-1093	21-1022
	250A	O ₂ Plasma / Air Shield	21-1014	21-1017	21-1030	21-1056	21-1042	21-1093	21-1022
	300A	O ₂ Plasma / Air Shield	—	21-1305	21-1105	21-1160	21-1042	21-1308*	21-1300
	400A	O ₂ Plasma / Air Shield	—	21-1305	21-1304	21-1309	21-1042	21-1308*	21-1300

* Use with Coolant Tube Extension 9-7921

Stainless Steel & Aluminum	150A	H35 Plasma / N ₂ Shield	—	21-1016	21-1037	21-1278	21-1063	21-1041	21-1081	21-1020
		N ₂ Plasma / H ₂ O Shield	—	21-1016	21-1048	21-1278	21-1092	21-1041	21-1081	21-1020
	200A	H35 Plasma / N ₂ Shield	21-1015	21-1017	21-1073 (SS/AL ≤1" (25mm)) 21-1073 (SS >1" (25mm)) 21-1094 (AL >1" (25mm))	21-1284	21-1095	21-1043	21-1096	21-1022
		N ₂ Plasma / H ₂ O Shield	21-1015	21-1017	21-1049	21-1284	21-1067	21-1043	21-1089	21-1022
	300A	H35 Plasma / N ₂ Shield	21-1015	21-1017	21-1038 (≤1" (25mm)) 21-1039 (>1" (25mm))	21-1284	21-1065	21-1041	21-1091	21-1022
		N ₂ Plasma / H ₂ O Shield	21-1015	21-1017	21-1046	21-1284	21-1066	21-1043	21-1089	21-1022
	400A	H35 Plasma / N ₂ Shield	—	21-1305	21-1304 (≤1" (25mm)) 21-1307 (>1" (25mm))	21-1303	21-1302	21-1306	21-1301	21-1300
		H17 Plasma / N ₂ Shield	—	21-1305	21-1303	21-1500	21-1302	21-1043	21-1502	21-1300

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8.10 Torch Assembly Parts List

Returns

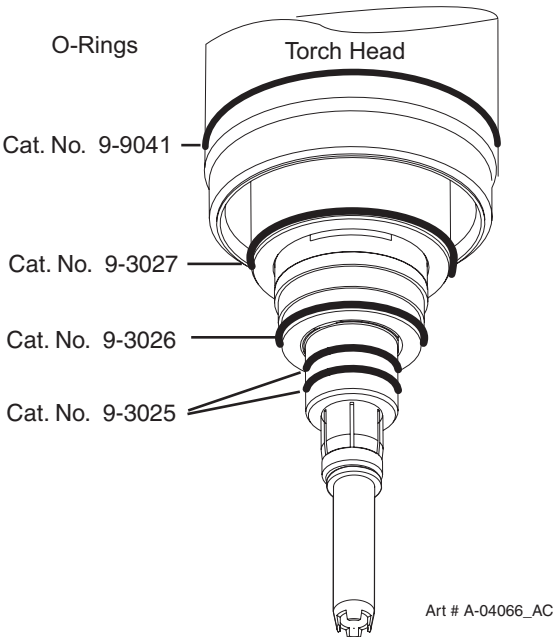
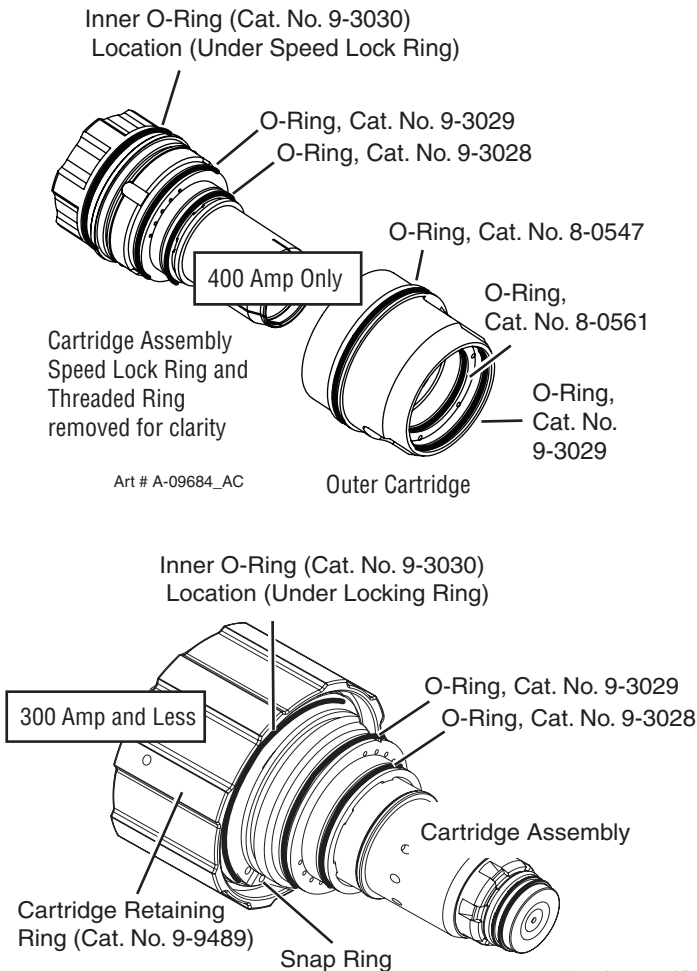
If a product must be returned for service, contact your authorized distributor. Materials returned without proper authorization will not be accepted.

Ordering Information

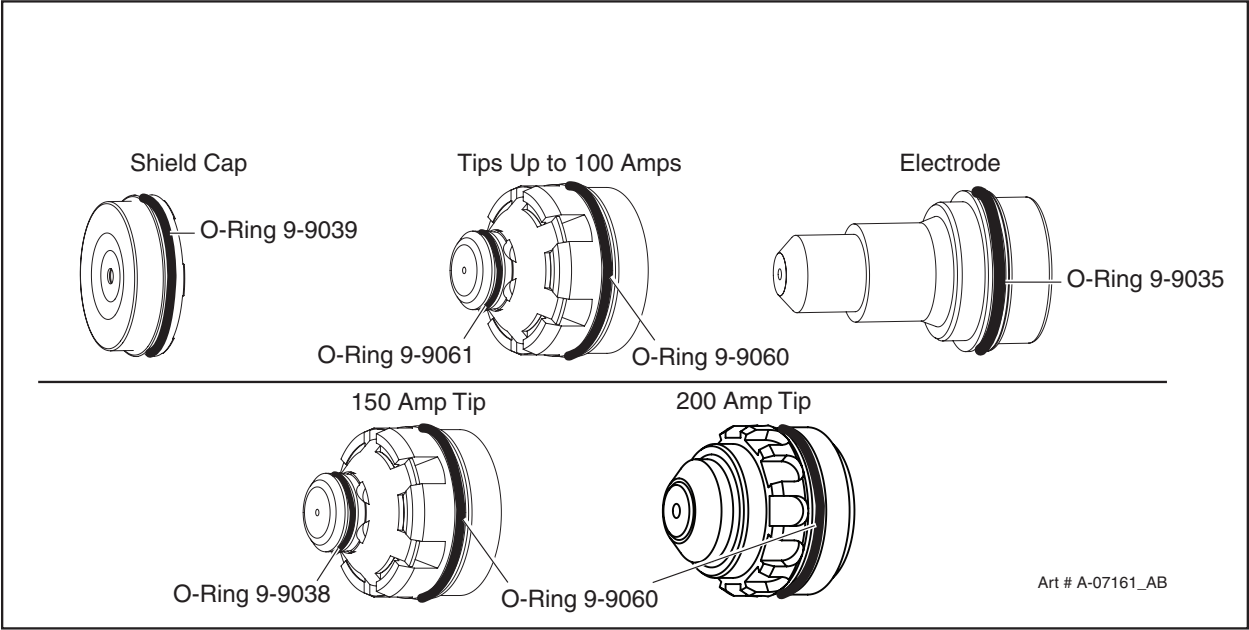
Order replacement parts by catalog number and complete description of the part or assembly. Also include the model and serial number of the machine or torch.

Refer to parts diagrams within the body of the manual for consumable parts and replacement O-Ring catalog numbers.

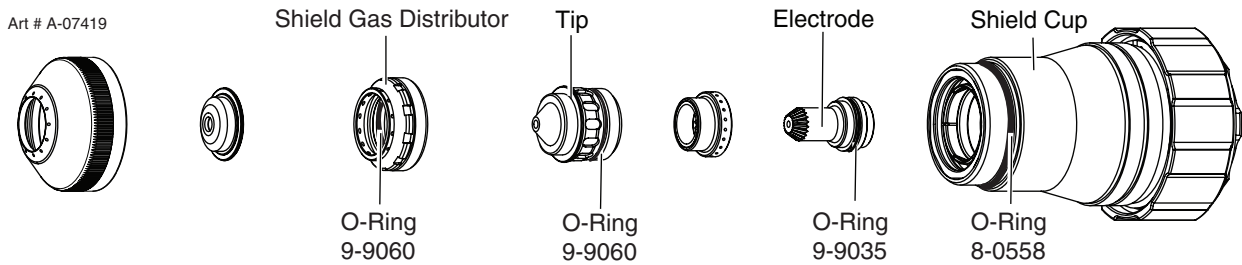
Description	Catalog Number
O-Ring Lubricant (Christo-Lube MCG-129)	9-4893
Torch Head and Cartridge O-Ring Kit	9-9488
Shield Cup (up to 150A)	21-1016
Shield Cup (200A - 300A)	21-1017
Shield Cup (400A)	21-1305
Torch Cartridge (includes Cartridge Tool) (up to 150A)	21-1020
Torch Cartridge (includes Cartridge Tool) (200A - 300A)	21-1022
Torch Cartridge (400A Only)	21-1300
Cartridge Tool	9-9431
Cartridge Retaining Ring	9-9489



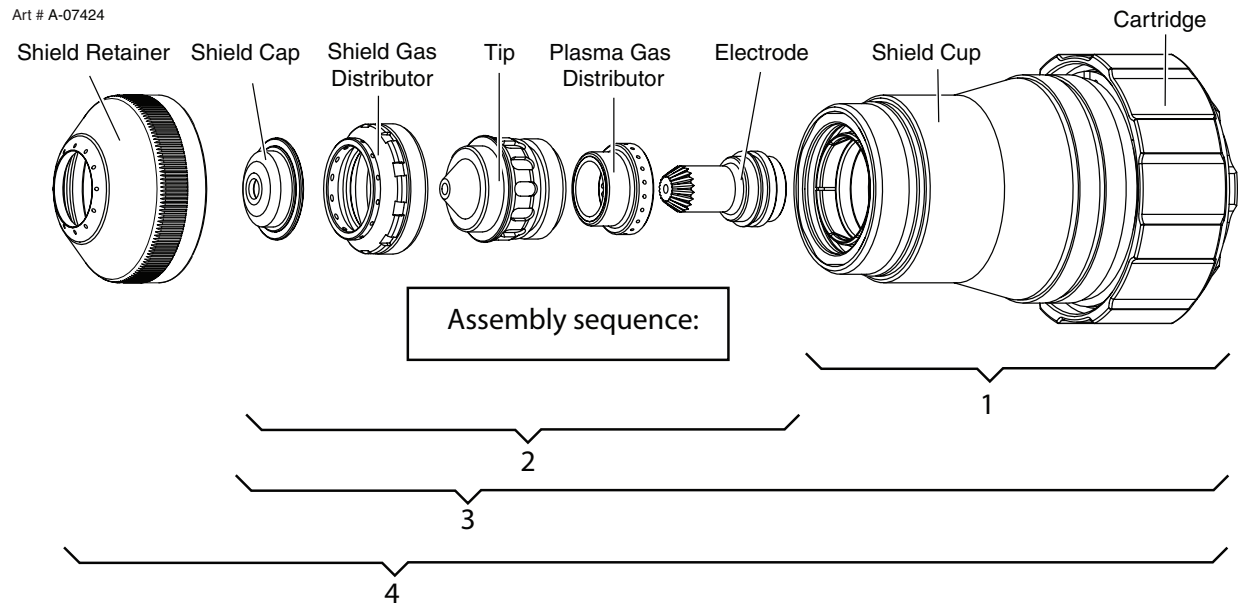
Consumables O-Rings (up to 150 Amps)



Consumables O-Rings (300 Amps)

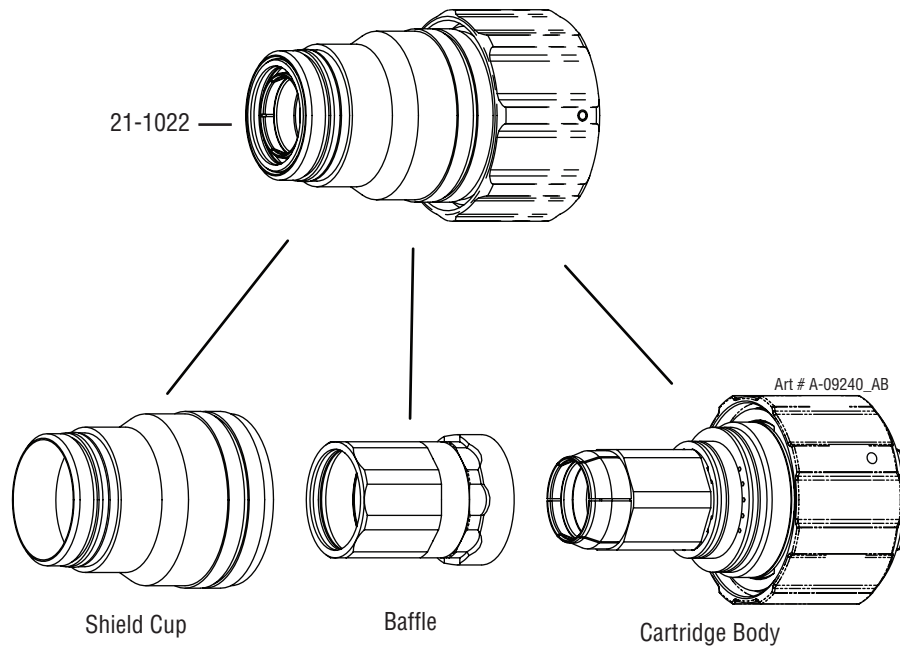


Assembly Sequence, 200/300 Amp Consumables

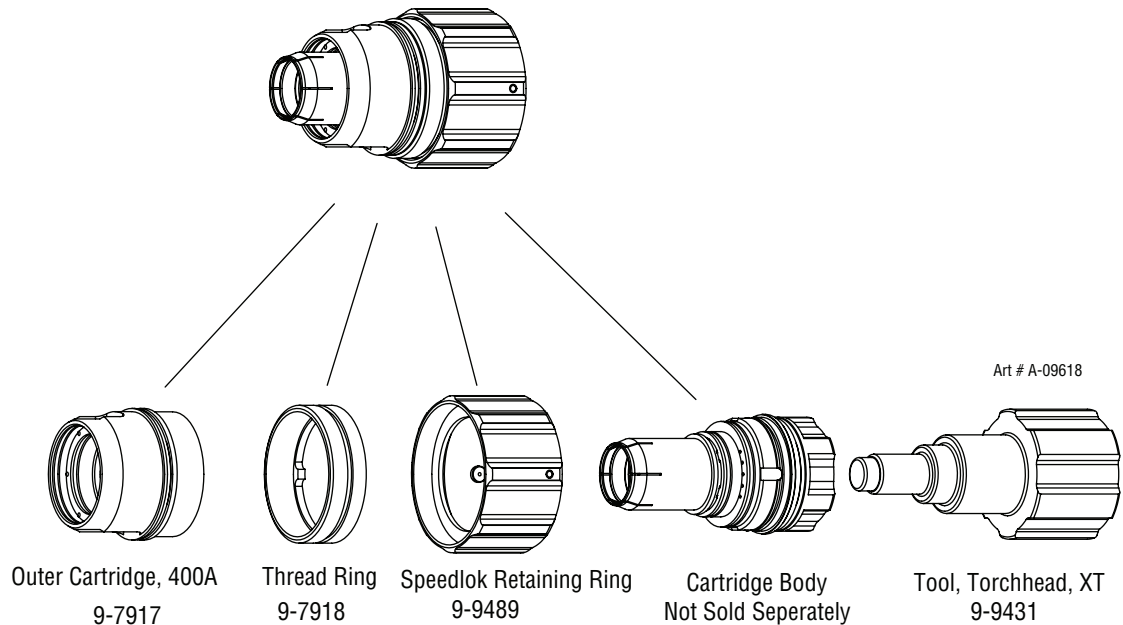


Cartridge Assembly (21-1022) Consumables

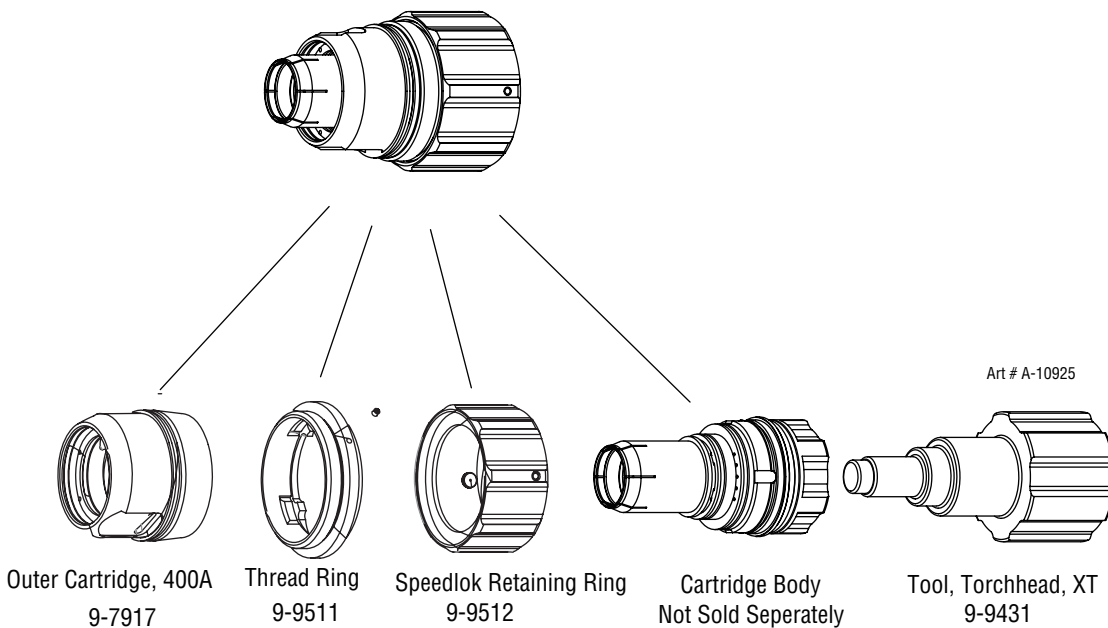
Cartridge Assembly



Older Cartridge Assembly 400 Amp (21-1300) Consumables



New Cartridge Assembly 400 Amp (21-1300) Consumables

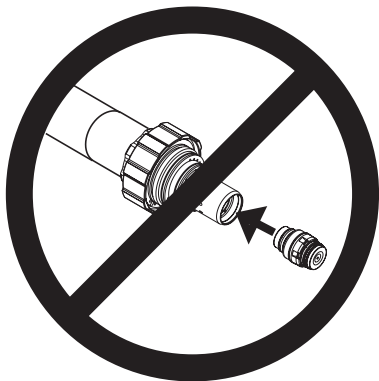


Assembly Procedure

400A Cartridge is assembled in the following steps:

1. Insert the cartridge body into the speedlok retaining ring (9-9512). Note the orientation of the brass buttons/pins.
2. Insert the above two parts into the thread ring (9-9511), which includes a set screw, making sure to align the four tabs with the slots in the Cartridge Body.
3. Thread the Outer Cartridge (9-7917) onto the Cartridge Body and tighten using the Torchhead Tool (9-9431).
4. Use 1.3mm Allen Wrench/hex key to insert and secure the M2.5x3mm Cup Point set screw in a clockwise direction.

8.11 Torch Consumables Installation

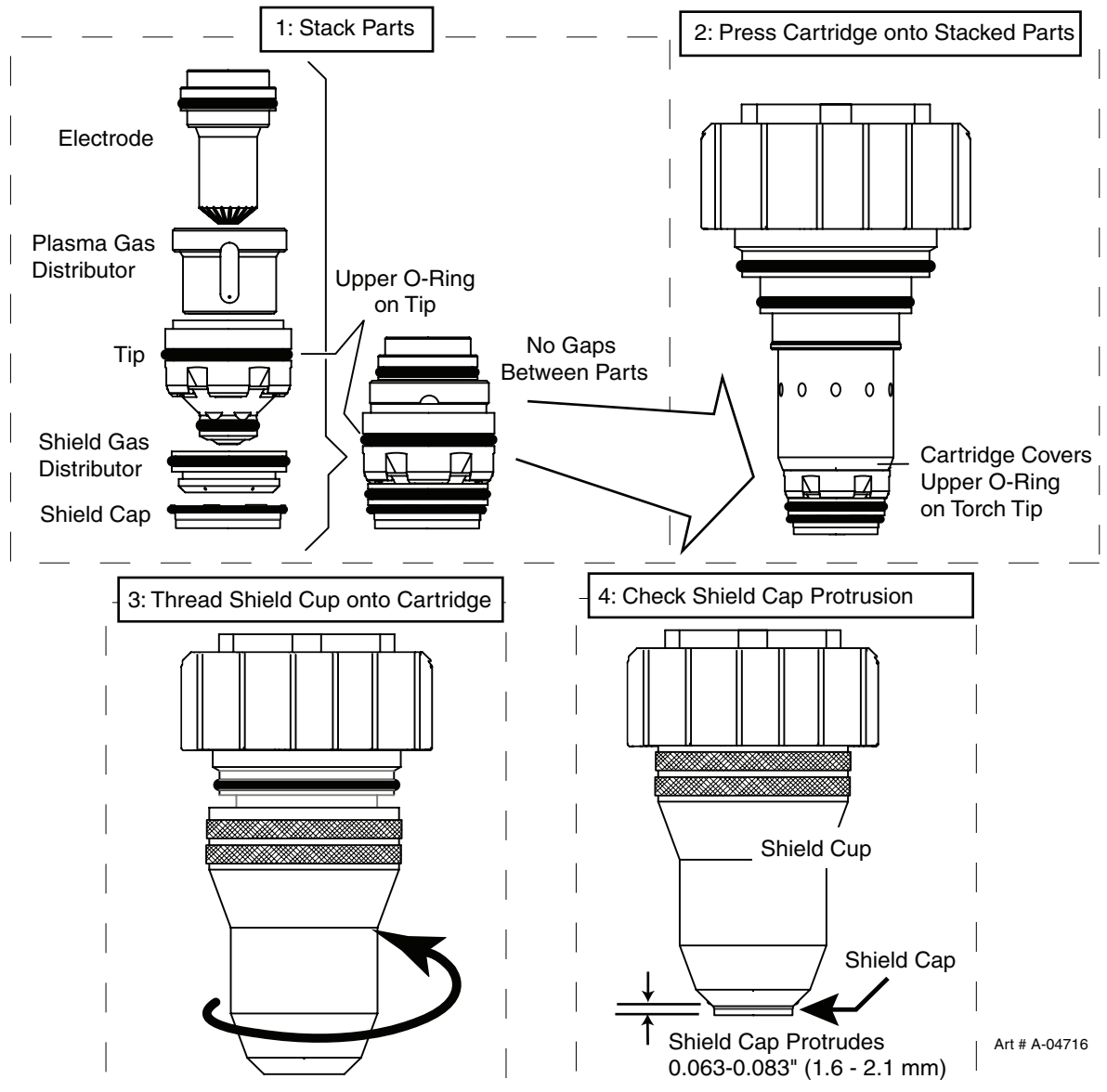


WARNINGS

Do not install consumables into the Cartridge while the Cartridge is attached to the Torch Head. Keep foreign materials out of the consumables and Cartridge. Handle all parts carefully to avoid damage, which may affect torch performance.

Art # A-03887

1. Install the consumables as follows:



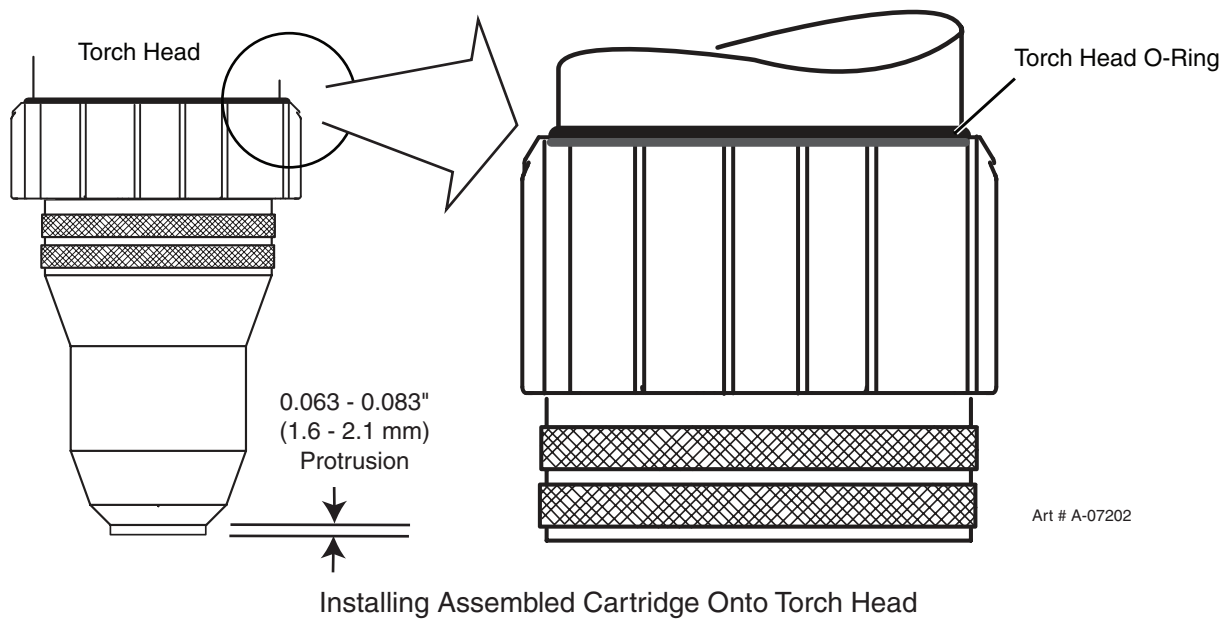
2. Remove the Removal Tool from the Cartridge and install the assembled Cartridge onto the Torch Head.



CAUTION

The cartridge assembly must cover the O-Ring on the torch head.

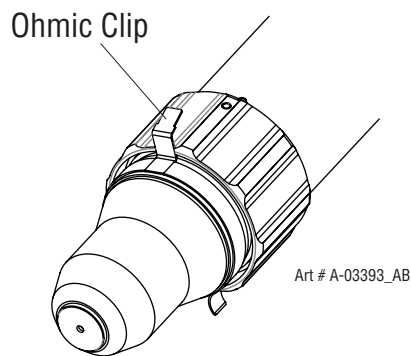
Do not force the cartridge if it will not tighten fully. Remove the cartridge assembly and gently clean the threads on the torch head with a wire brush. Apply oxygen-compatible lubricant (supplied with the torch) to the threads.



3. Slide the ohmic clip over the shield cup if using ohmic torch height control sensing.

NOTE

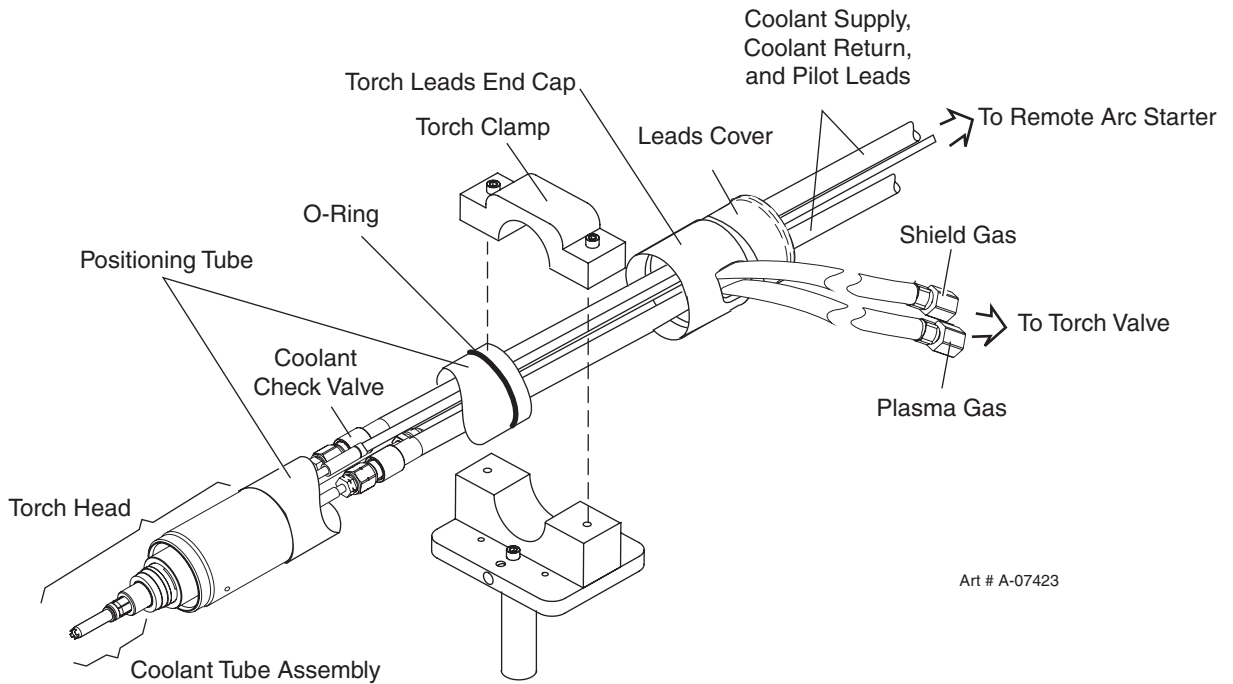
Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.



4. Connect the wire lead from the height finder to the ohmic clip.

Torch Replacement Parts

Description	Catalog Number
Torch Head Components	
Torch Head Assembly	21-1002
Coolant Check Valve Assembly	9-4846
Torch Clamp Assembly	9-9336
Torch Positioning Tube (includes hardware kit 9-4847)	9-4700
Positioning Tube Hardware Kit (O-Ring)	9-4847
Plasma & Shield Leads Assembly (to Torch Valve)	4-3026
Ohmic Clip (not shown)	9-9388



8.12 PATENT INFORMATION

This product may be protected by one or more of the following U.S. Patent Nos.:

6852944; 6919526; 694616; 6989505; 6998566; 7005600; 7019254; 7071443; 7126080; 7132619; 7737383