

Auto-Cut XT® Cutting Process Charts



**55 - 300 Amp
Standard**



Art # A-14466

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**WARNING**

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment.

While the information contained in this Manual represents the Manufacturer's best judgment, the Manufacturer assumes no liability for its use.

Ultra-Cut XT®

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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; alloying contents 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 may cause damage to the tip.

Notes on Chart Measurements

Pressure measurements in the charts are in psi(g), not psi(a). $0 \text{ psi(g)} = 14.7 \text{ psi(a)}$ (1 atmosphere).

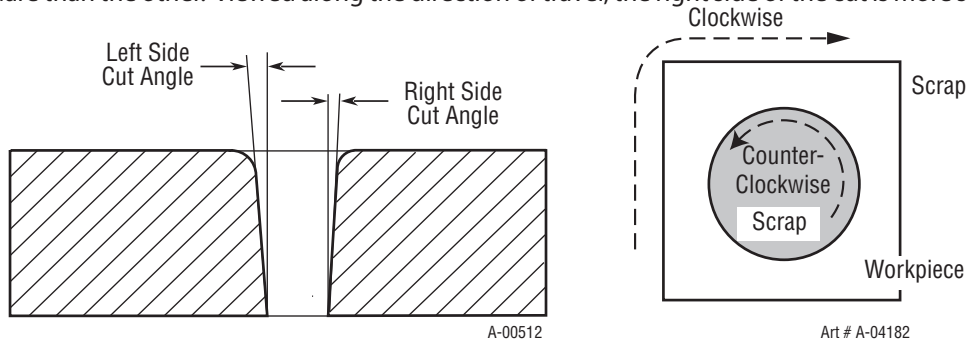
Ball settings are at the center of the gauge ball.

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

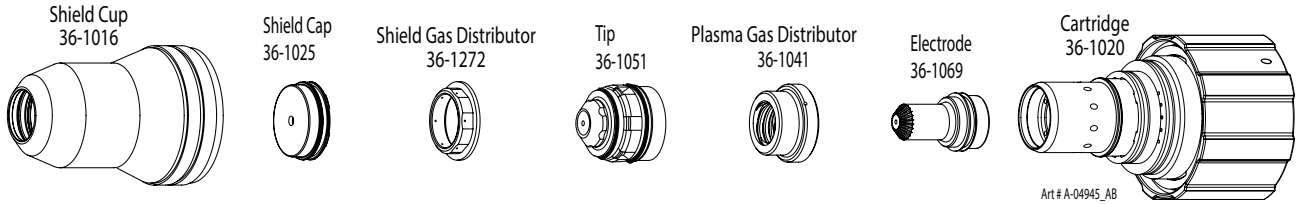
To make a square - edged cut along an inside diameter of a circle, move the torch counterclockwise around the circle. To keep the square edge along an outside diameter cut, move the torch in a clockwise direction.

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.

1.01 Straight Cutting Mild Steel 55-300 Amp

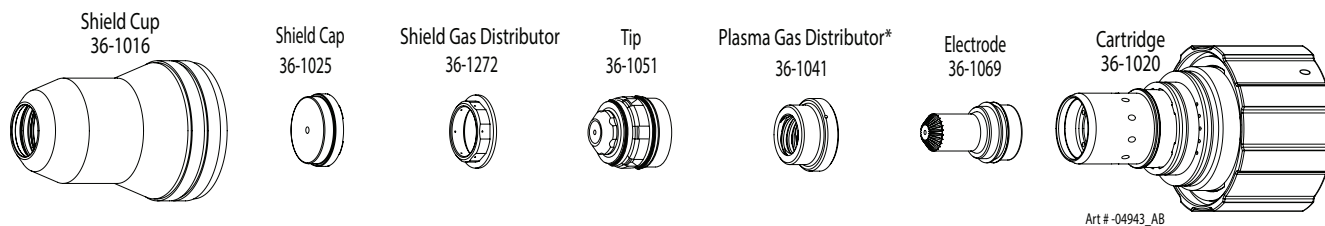
Mild Steel 55A Air Plasma / Air Shield



55A Mild Steel (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
21		0.033	70	20	152	0.188	500	0.200	0.1	0.079
16		0.060	70	20	154	0.188	300	0.200	0.1	0.086
10		0.135	92	80	166	0.188	190	0.200	0.2	0.079
	3/16	0.188	92	80	166	0.188	130	0.250	0.3	0.089
	1/4	0.250	92	80	170	0.188	95	0.250	0.3	0.090

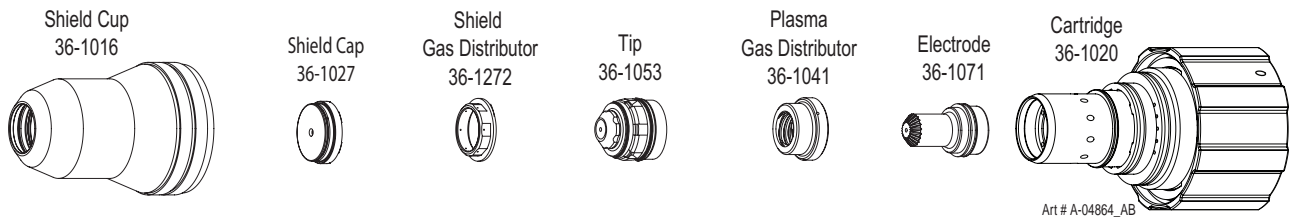
55A Mild Steel (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
1			4.8	1.4	152	4.8	11500	5.1	0.1	2.0
2			4.8	1.4	157	4.8	6920	5.1	0.1	2.1
3			6.3	5.5	163	4.8	5460	5.1	0.2	2.0
4			6.3	5.5	166	4.8	4180	5.6	0.2	2.1
5			6.3	5.5	167	4.8	3180	6.4	0.3	2.3
6			6.3	5.5	169	4.8	2610	6.4	0.3	2.3

Mild Steel, 55A O2 Plasma / Air Shield



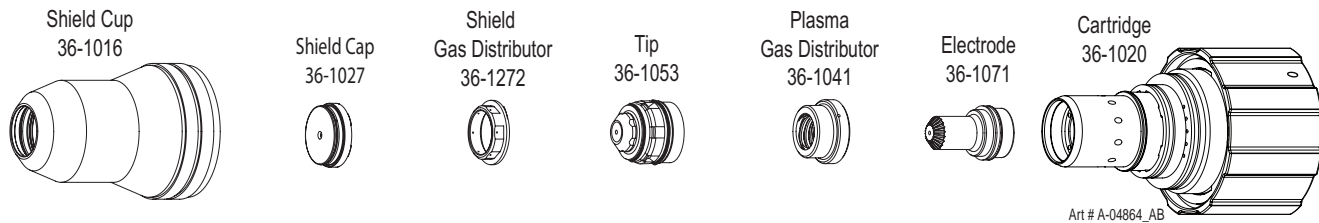
55A Mild Steel (O2/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (O2)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
21		0.033	70	20	120	0.125	600	0.200	0.0	0.073
16		0.060	70	20	120	0.125	400	0.200	0.0	0.071
10		0.135	80	20	126	0.125	180	0.200	0.2	0.083
	3/16	0.188	80	20	127	0.125	120	0.200	0.2	0.081
	1/4	0.250	80	20	128	0.125	85	0.200	0.3	0.086
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (O2)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
1			4.8	1.4	120	3.2	14040	5.1	0.0	1.8
2			4.8	1.4	121	3.2	8760	5.1	0.0	1.9
3			5.5	1.4	125	3.2	5830	5.1	0.2	2.0
4			5.5	1.4	126	3.2	3930	5.1	0.2	2.1
5			5.5	1.4	127	3.2	2920	5.1	0.2	2.1
6			5.5	1.4	128	3.2	2360	5.1	0.3	2.2

Mild Steel
100A
Air Plasma / Air Shield



100A Mild Steel (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
16		0.060	90	45	149	0.110	600	0.250	0.1	0.072
10		0.135	90	45	145	0.110	300	0.250	0.2	0.065
	3/16	0.188	90	45	149	0.110	210	0.250	0.3	0.073
	1/4	0.250	90	45	152	0.120	150	0.300	0.3	0.078
	3/8	0.375	90	45	152	0.130	85	0.300	0.3	0.091
	1/2	0.500	90	45	159	0.140	75	0.300	0.3	0.095
	5/8	0.625	90	45	153	0.140	55	0.350	0.5	0.099
	3/4	0.750	90	45	163	0.150	30	0.350	0.6	0.120
	1	1.000	90	45	180	0.200	20	Edge Start		0.122
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
2			6.2	3.1	148	2.8	13340	6.4	0.1	1.8
3			6.2	3.1	146	2.8	9340	6.4	0.2	1.7
4			6.2	3.1	147	2.8	6650	6.4	0.2	1.7
5			6.2	3.1	149	2.8	5120	6.5	0.3	1.9
6			6.2	3.1	151	3.0	4150	7.3	0.3	2.0
8			6.2	3.1	152	3.2	2950	7.6	0.3	2.2
10			6.2	3.1	153	3.3	2120	7.6	0.3	2.3
12			6.2	3.1	157	3.5	1960	7.6	0.3	2.4
15			6.2	3.1	155	3.6	1540	8.9	0.5	2.5
20			6.2	3.1	166	4.0	720	9.0	0.6	3.0
25			6.2	3.1	179	5.0	520	Edge Start		3.1

Mild Steel
100A
O₂ Plasma / Air Shield

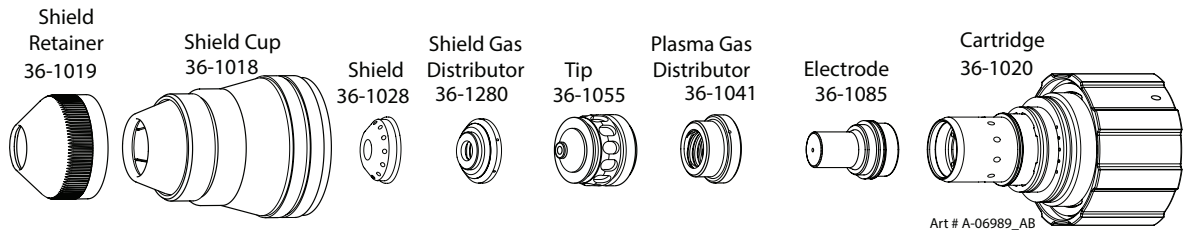


100A Mild Steel (O ₂ /Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (O ₂)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
16		0.060	94	49	127	0.110	500	0.250	0.1	0.071
10		0.135	94	49	134	0.110	240	0.250	0.2	0.081
	3/16	0.188	94	49	128	0.120	185	0.250	0.3	0.073
	1/4	0.250	94	49	130	0.120	130	0.300	0.3	0.095
	3/8	0.375	94	49	138	0.130	80	0.300	0.3	0.113
	1/2	0.500	94	49	138	0.140	57	0.300	0.3	0.113
	5/8	0.625	94	49	144	0.140	45	0.350	0.5	0.111
	3/4	0.750	94	49	150	0.150	25	0.350	0.6	0.138
	1	1.000	94	49	164	0.200	10	Edge Start		0.140
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (O ₂)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
2			6.5	3.4	129	2.8	11050	6.4	0.1	1.9
3			6.5	3.4	132	2.8	7580	6.4	0.2	2.0
4			6.5	3.4	131	2.9	5500	6.4	0.2	2.0
5			6.5	3.4	128	3.1	4500	6.5	0.3	1.9
6			6.5	3.4	130	3.1	3610	7.3	0.3	2.3
8			6.5	3.4	134	3.2	2640	7.6	0.3	2.7
10			6.5	3.4	138	3.3	1950	7.6	0.3	2.9
12			6.5	3.4	138	3.5	1580	7.6	0.3	2.9
15			6.5	3.4	142	3.6	1230	8.9	0.5	2.8
20			6.5	3.4	152	4.0	580	9.0	0.6	3.5
25			6.5	3.4	163	5.0	280	Edge Start		3.6

Mild Steel

200A

Air Plasma / Air Shield

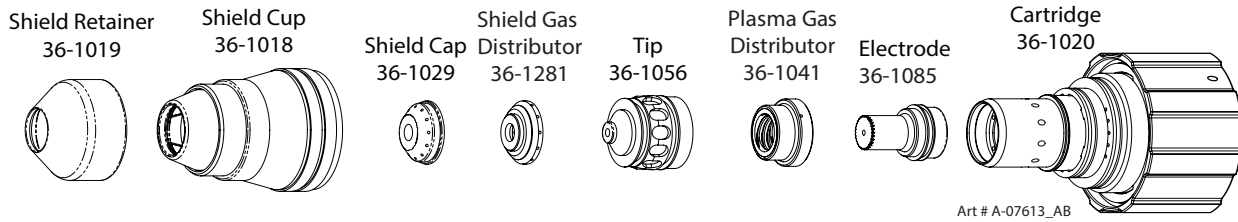


200A Mild Steel Air/Air										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	1/4	0.250	90	60	163	0.140	185	0.300	0	0.096
	3/8	0.375	90	60	160	0.140	130	0.300	0.1	0.131
	1/2	0.500	90	60	162	0.140	100	0.300	0.3	0.150
	5/8	0.625	90	60	164	0.140	75	0.300	0.4	0.158
	3/4	0.750	90	60	168	0.180	60	0.350	0.5	0.176
	1	1.000	90	60	177	0.200	35	0.500	1.5	0.189
	1 1/4	1.250	90	60	185	0.250	20	Edge Start		0.209
	1 1/2	1.500	90	60	189	0.250	15	Edge Start		0.225
	2	2.000	90	60	204	0.300	10	Edge Start		0.270
200A Mild Steel Air/Air										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
6			6.2	4.1	163	3.6	4700	7.6	0	2.4
8			6.2	4.1	161	3.6	3970	7.6	0.1	2.9
10			6.2	4.1	160	3.6	3190	7.6	0.1	3.4
12			6.2	4.1	162	3.6	2710	7.6	0.3	3.7
15			6.2	4.1	163	3.6	2080	7.6	0.4	4.0
20			6.2	4.1	169	4.6	1430	9.5	0.6	4.5
25			6.2	4.1	176	5.0	920	12.5	1.4	4.8
32			6.2	4.1	185	6.4	500	Edge Start		5.3
38			6.2	4.1	189	6.4	380	Edge Start		5.7
44			6.2	4.1	196	6.9	320	Edge Start		6.2
50			6.2	4.1	203	7.5	260	Edge Start		6.8

Mild Steel

200A

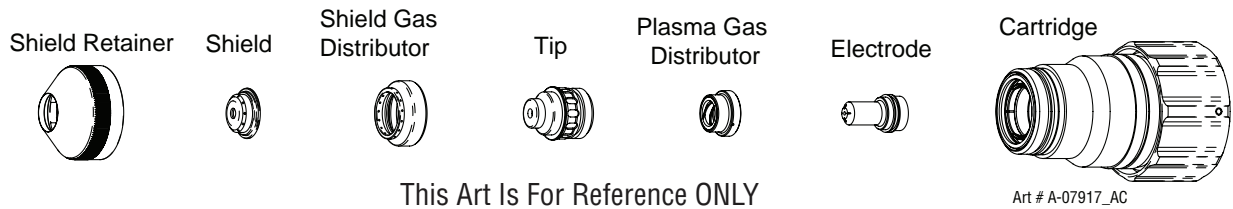
O₂ Plasma / Air Shield



200A Mild Steel O ₂ /Air										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (O ₂)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	1/4	0.250	90	58	154	0.140	190	0.300	0.1	0.153
	3/8	0.375	90	58	156	0.140	140	0.300	0.3	0.159
	1/2	0.500	90	58	158	0.140	100	0.350	0.4	0.168
	5/8	0.625	90	58	161	0.140	70	0.350	0.5	0.183
	3/4	0.750	90	58	168	0.160	60	0.400	0.6	0.192
	1	1.000	90	58	170	0.180	40	0.500	0.9	0.207
	1 1/4	1.250	90	58	175	0.200	30	0.500	2	0.216
	<i>1 1/2</i>	<i>1.500</i>	<i>90</i>	<i>58</i>	<i>178</i>	<i>0.200</i>	<i>20</i>	<i>Edge Start</i>		<i>0.237</i>
	2	2.000	90	58	203	0.250	10	<i>Edge Start</i>		0.268
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (O ₂)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
6			6.2	4.0	154	3.6	4830	7.6	0.1	3.9
8			6.2	4.0	155	3.6	4170	7.6	0.2	4.0
10			6.2	4.0	156	3.6	3400	7.8	0.3	4.1
12			6.2	4.0	158	3.6	2760	8.6	0.4	4.2
15			6.2	4.0	160	3.6	1990	8.9	0.5	4.5
20			6.2	4.0	168	4.1	1450	12.7	0.6	4.9
25			6.2	4.0	170	4.5	1050	12.7	0.9	5.2
32			6.2	4.0	175	5.1	750	12.7	2.1	5.5
38			6.2	4.0	178	5.1	510	<i>Edge Start</i>		6.0
44			6.2	4.0	190	5.7	390	<i>Edge Start</i>		6.4
50			6.2	4.0	201	6.3	270	<i>Edge Start</i>		6.8

Bold Type indicates maximum piercing parameters. **Bold Italic** indicates edge starts only.

Mild Steel
300A
Air Plasma / Air Shield



This Art Is For Reference ONLY

Shield Retainer			Shield Cap		Shield Gas Distributor		Tip		Plasma Gas Distributor		Electrode		Cartridge	
36-1021			36-1037		36-1283		36-1050		36-1044		36-1088		36-1022	
"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"				
			Plasma (Air)	Shield (Air)										
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)				
	3/4	0.750	90	80	166	0.150	75	0.350	0.4	0.210				
	7/8	0.875	90	80	172	0.150	65	0.400	0.6	0.220				
	1	1.000	90	80	175	0.150	55	0.400	1.0	0.230				
	1.25	1.250	90	80	184	0.250	40	0.500	1.8	0.260				
	1.5	1.500	90	80	193	0.250	20	0.500	3.0	0.300				
	1.75	1.750	90	80	203	0.350	15	Edge Start		0.325				
	2	2.000	90	80	210	0.350	10	Edge Start		0.355				
	2 1/4	2.250	90	80	215	0.350	6	Edge Start		0.360				
	2 3/4	2.750	120	90	252	0.350	4	Edge Start		NA				
"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"				
			Plasma (Air)	Shield (Air)										
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)				
20	0	0	6.2	5.5	168	3.8	1830	9.3	0.5	5.4				
25	0	0	6.2	5.5	175	3.8	1430	10.2	0.9	5.8				
30	0	0	6.2	5.5	184	6.4	1020	12.7	1.8	6.6				
40	0	0	6.2	5.5	196	7.1	470	Edge Start		7.8				
50	0	0	6.2	5.5	209	8.7	270	Edge Start		8.9				
60	0	0	6.2	5.5	222	8.7	130	Edge Start		9.0				
70	0	0	8.2	6.2	253	8.7	100	Edge Start		6.0				

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

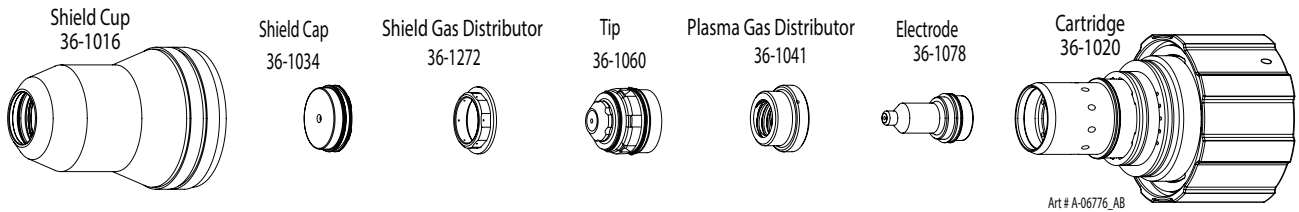
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1.02 Straight Cutting Stainless Steel 55-300 Amp

Stainless Steel

55A

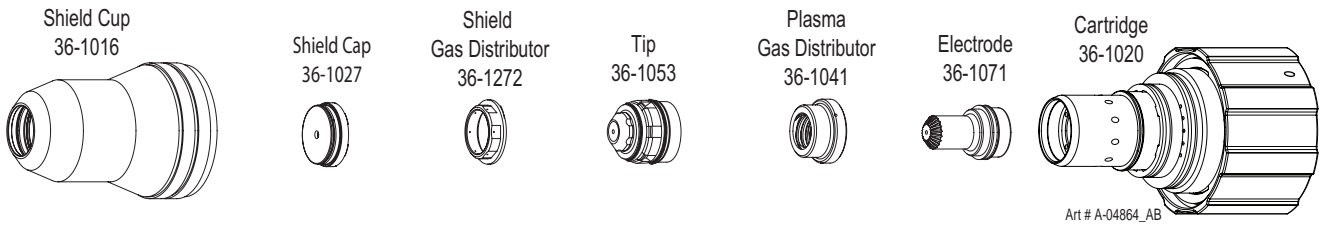
Air Plasma / Air Shield



55A Stainless Steel (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
21		0.034	70	20	104	0.125	600	0.200	0.0	0.067
16		0.063	70	50	105	0.150	350	0.200	0.0	0.068
10		0.141	70	50	110	0.150	100	0.200	0.1	0.086
	3/16	0.188	70	50	112	0.150	60	0.200	0.1	0.086
	1/4	0.250	70	50	112	0.150	40	0.200	0.2	0.088

55A Stainless Steel (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
0.8			4.8	1.4	104	3.2	15240	5.1	0.0	1.7
1			4.8	1.4	104	3.3	14060	5.1	0.0	1.7
1.5			4.8	3.4	105	3.7	9750	5.1	0.0	1.7
2			4.8	3.4	106	3.8	7610	5.1	0.0	1.8
3			4.8	3.4	109	3.8	4400	5.1	0.1	2.1
4			4.8	3.4	111	3.8	2180	5.1	0.1	2.2
5			4.8	3.4	112	3.8	1450	5.1	0.1	2.2
6			4.8	3.4	112	3.8	1130	5.1	0.2	2.2

Stainless Steel 100A Air Plasma / Air Shield



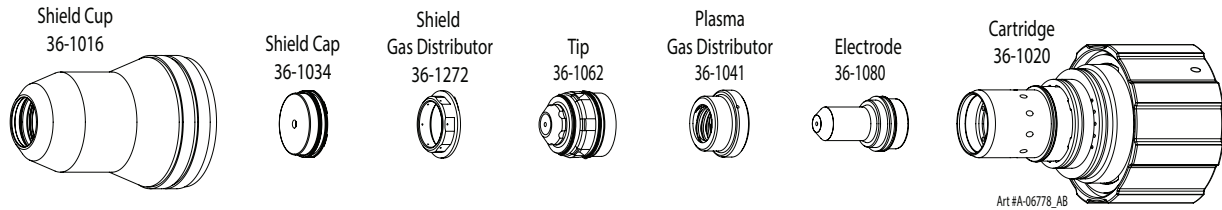
STRAIGHT CUTTING - SS

100A Stainless Steel (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
16		0.063	85	42	144	0.080	500	0.200	0.0	0.099
10		0.141	85	42	150	0.100	225	0.325	0.0	0.102
	3/16	0.188	85	42	153	0.140	175	0.325	0.1	0.105
	1/4	0.250	85	42	155	0.140	100	0.325	0.1	0.105
	3/8	0.375	85	42	160	0.140	65	0.325	0.2	0.110
	1/2	0.500	85	42	166	0.160	45	0.325	0.4	0.112
	5/8	0.625	85	42	165	0.160	35	0.350	1.0	0.114
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
1.5			5.7	2.9	144	2.0	12700	5.1	0.0	2.4
2			5.7	2.9	145	2.1	11290	5.7	0.0	2.5
3			5.7	2.9	149	2.0	6330	8.3	0.0	2.6
4			5.7	2.9	150	3.6	7030	8.3	0.1	2.7
5			5.7	2.9	153	3.6	4170	8.3	0.1	2.7
6			5.7	2.9	155	3.6	2960	8.3	0.1	2.7
8			5.7	2.9	158	3.6	2080	8.3	0.2	2.7
10			5.7	2.9	161	3.6	1580	8.3	0.2	2.8
12			5.7	2.9	165	4.0	1260	8.3	0.4	2.8
15			5.7	2.9	165	4.1	960	8.7	1.0	2.9

Stainless Steel

100A

H35 Plasma / N₂ Shield

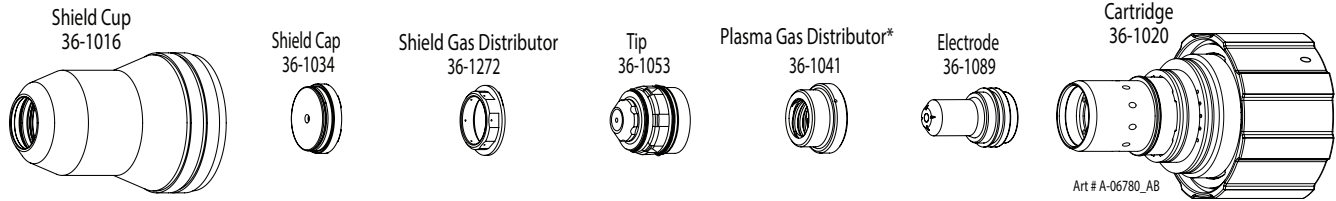


100A Stainless Steel (H35/N2)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N2)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/8	0.375	100	80	145	0.130	50	0.250	0.3	0.090
	1/2	0.500	100	80	148	0.130	37	0.250	0.5	0.100
	5/8	0.625	100	80	155	0.140	26	0.250	0.6	0.115
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N2)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
10			6.9	5.5	145	3.3	1220	6.4	0.3	2.3
12			6.9	5.5	147	3.3	1010	6.4	0.5	2.5
15			6.9	5.5	151	3.5	740	6.4	0.6	2.8
NOTES:										
1. Plasma must be 100 PSI or higher for consistent transfer and uninterrupted cutting on all metal thicknesses.										
2. 3/8" SS has good dross free cut on sides 1 & 2 but very heavy ball type dross on sides 3 & 4										
3. 5/8" SS has short spike shaped dross on sides 2 & 4.										
4. Cut parameters for 1/2" SS are very tight related to speed.										

Stainless Steel

100A

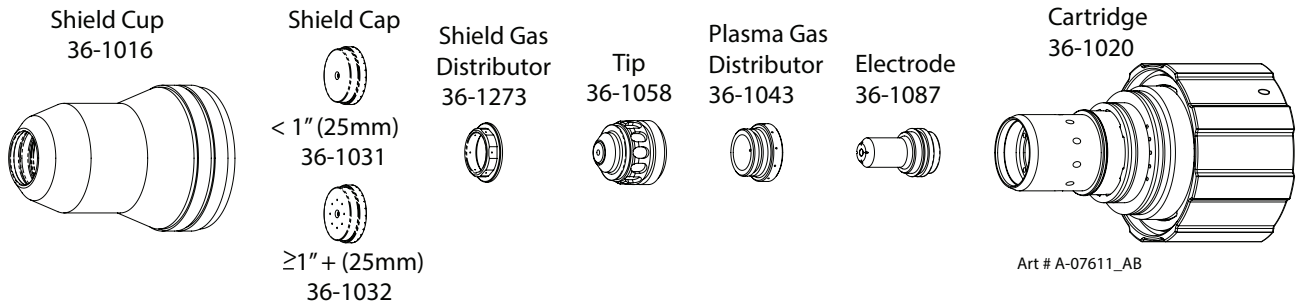
N₂ Plasma / H₂O Shield



STRAIGHT CUTTING - SS

100A Stainless Steel (N2/H2O)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N2)	Shield (H2O)						
(ga)	(in)	inch	(PSI)	Ball *	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
10		0.141	100	5	160	0.125	160	0.200	0.000	0.074
	3/16	0.188	100	5	157	0.125	100	0.250	0.300	0.080
	1/4	0.250	100	5	155	0.125	60	0.250	0.300	0.086
	3/8	0.375	100	5	159	0.125	50	0.250	0.300	0.087
	1/2	0.500	100	5	169	0.130	35	0.300	0.500	0.100
	5/8	0.625	100	5	175	0.140	30	0.300	0.600	0.110
	3/4	0.750	100	5	177	0.150	25	Edge Start		0.125**
** Not measured, extrapolated value										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N2)	Shield (H2O)						
(mm)			(Bar)	Ball *	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
3			6.9	5	161	3.2	4810	4.5	0.0	1.8
4			6.9	5	159	3.2	3530	5.5	0.1	1.9
5			6.9	5	157	3.2	2400	6.4	0.3	2.1
6			6.9	5	155	3.2	1750	6.4	0.3	2.2
8			6.9	5	157	3.2	1390	6.4	0.3	2.2
10			6.9	5	160	3.2	1210	6.4	0.3	2.3
12			6.9	5	167	3.3	970	7.3	0.5	2.5
15			6.9	5	173	3.5	800	7.6	0.6	2.7
20			6.9	5	178	3.9	600	Edge Start		3.3
* Ball setting for shield water is set using a line pressure of 55 PSI / 3.8 Bar										

Stainless Steel
200A
H35 Plasma / N₂ Shield **



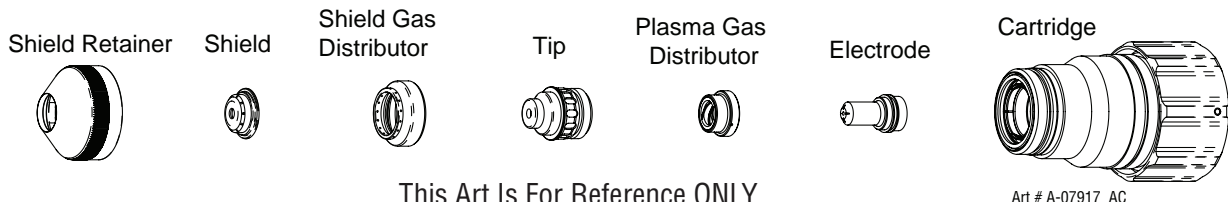
200A Stainless Steel (H35/N2)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height*	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N2)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/8	0.375	70	120	157	0.240	90	0.300	0.5	0.158
	1/2	0.5	70	120	160	0.260	65	0.300	0.6	0.171
	5/8	0.625	70	120	165	0.280	50	0.350	0.7	0.178
	3/4	0.75	70	120	168	0.300	40	0.450	0.8	0.180
	7/8	0.875	70	120	172	0.300	30	0.450	0.9	0.178
	1	1	70	120	175	0.325	25	0.450	1.3	0.185
	1 1/4	1.25	70	120	180	0.300	20	Edge Start		0.175
	1 1/2	1.5	70	120	182	0.300	15	Edge Start		0.180
	2	2	70	120	185	0.325	10	Edge Start		0.195
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height*	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N2)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
10			4.8	8.3	157	6.2	2190	7.6	0.5	4.1
12			4.8	8.3	159	6.5	1790	7.6	0.6	4.3
15			4.8	8.3	164	7.3	1380	8.5	0.7	4.5
20			4.8	8.3	169	7.8	940	11.4	0.8	4.6
25			4.8	8.3	175	8.3	650	11.4	1.2	4.7
32			4.8	8.3	180	8.3	500	Edge Start		4.5
38			4.8	8.3	182	8.3	380	Edge Start		4.6
50			4.8	8.3	185	8.3	260	Edge Start		4.9

STRAIGHT CUTTING - SS

Stainless Steel

300A

Air Plasma / Air Shield

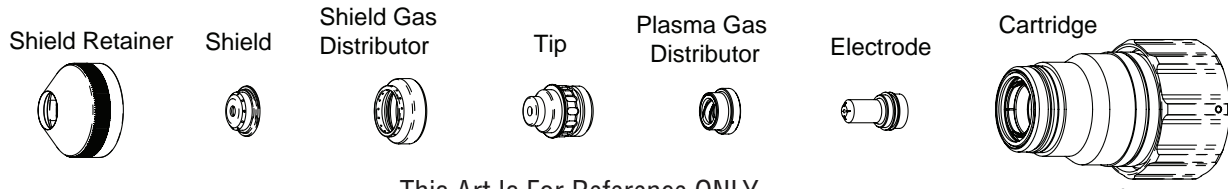


This Art Is For Reference ONLY

Shield Retainer		Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge			
36-1021		36-1037	36-1283	36-1050	36-1044	36-1088	36-1022			
"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/4	0.750	90	80	179	0.300	100	0.400	0.5	0.125
	7/8	0.875	90	80	182	0.300	75	0.400	0.7	0.133
	1	1.000	90	80	190	0.300	60	0.400	0.8	0.166
	1.25	1.250	90	80	193	0.300	40	0.500	3.0	0.200
	1.5	1.500	90	80	196	0.300	15	0.500	10.0	0.220
	1.75	1.750	90	80	206	0.300	8	Edge Start		0.265
"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
20	0	0	6.2	5.5	178	7.6	2330	10.2	0.5	3.2
25	0	0	6.2	5.5	190	7.6	1520	10.2	0.8	4.2
30	0	0	6.2	5.5	192	7.6	1010	12.7	3.0	5.1
40	0	0	6.2	5.5	197	7.6	810	12.7	10.0	5.6
50	0	0	6.2	5.5	210	7.6	100	Edge Start		7.0
<p>"BOLD TYPE" indicates maximum piercing parameters. "BOLD ITALIC" indicates edge starts only.</p>										

STRAIGHT CUTTING - SS

Stainless Steel 300A N₂ Plasma / H₂O Shield



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
36-1015	36-1038	36-1284	36-1063	36-1048	36-1089	36-1022

"Material Thickness"			Cut Flow Rates / Pressures			Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N ₂)	Shield (H ₂ O)							
(ga)	(in)	inch	psi	Ball	psi	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/8	0.375	100	8	55	150	0.150	140	0.350	0.3	0.144
	1/2	0.500	100	8	55	159	0.150	100	0.350	0.5	0.154
	5/8	0.625	100	8	55	158	0.150	75	0.350	0.1	0.153
	3/4	0.750	100	8	55	166	0.200	55	0.500	0.7	0.173
	7/8	0.875	100	8	55	180	0.300	45	0.500	1.1	0.210
	1	1.000	100	8	55	182	0.300	40	0.500	1.3	0.210
	1 1/4	1.250	100	8	55	196	0.350	30	0.500	2.0	0.230
	1 1/2	1.500	100	8	55	198	0.350	25	Edge Start		0.232
	1 3/4	1.750	100	8	55	198	0.350	18	Edge Start		0.237
	2	2.000	100	8	55	205	0.350	12	Edge Start		0.253

"Material Thickness"			Cut Flow Rates / Pressures			Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N ₂)	Shield (H ₂ O)							
(mm)			bar	Ball	bar	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
10	0	0	6.9	8	3.8	151	3.8	3400	8.9	0.3	3.7
12	0	0	6.9	8	3.8	157	3.8	2760	8.9	0.5	3.9
15	0	0	6.9	8	3.8	158	3.8	2080	9.4	0.6	3.9
20	0	0	6.9	8	3.8	170	5.8	1320	12.7	0.8	4.7
25	0	0	6.9	8	3.8	182	7.6	1030	12.7	1.3	5.3
32	0	0	6.9	8	3.8	196	8.9	760	12.7	2.0	5.8
38	0	0	6.9	8	3.8	198	8.9	640	Edge Start		5.9
44	0	0	6.9	8	3.8	198	8.9	470	Edge Start		6.0
50	0	0	6.9	8	3.8	204	8.9	320	Edge Start		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: Water source used for shield must be demineralized.

STRAIGHT CUTTING - SS

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This Chart for Customer Settings
Make Copies as Desired.

"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)

"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)

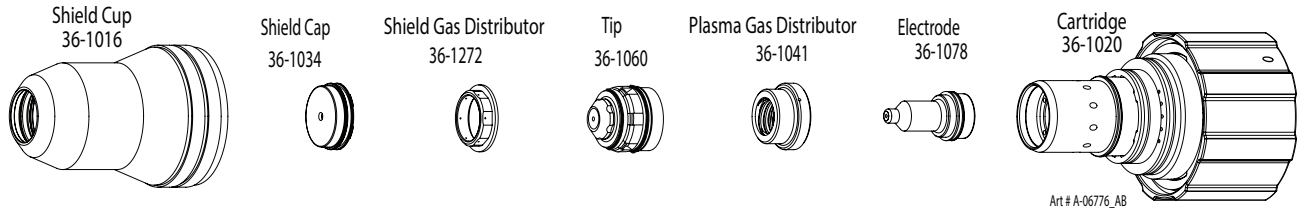
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1.03 Straight Cutting Aluminum 55-300 Amp

Aluminum

55A

Air Plasma / Air Shield



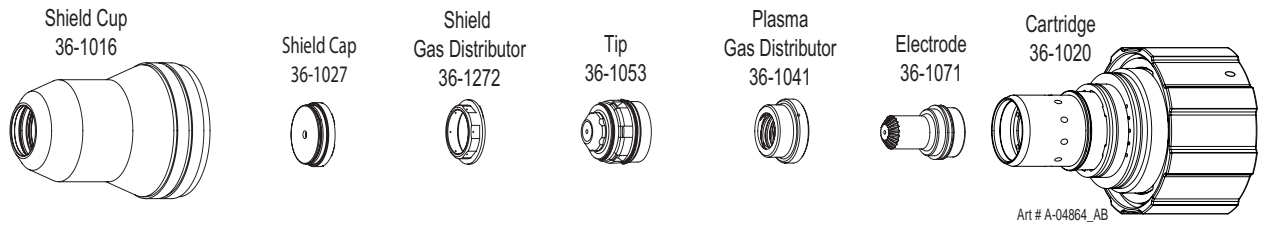
55A Aluminum (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
23		0.031	70	50	100	0.100	600	0.150	0.0	0.066
16		0.064	70	50	105	0.100	400	0.200	0.0	0.070
		0.135	70	50	115	0.150	140	0.200	0.0	0.084
	3/16	0.188	70	50	120	0.150	100	0.200	0.0	0.084
	1/4	0.250	70	50	122	0.150	50	0.200	0.1	0.089
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
1			4.8	3.4	101	2.5	13950	4.1	0.0	1.7
2			4.8	3.4	107	2.8	8790	5.1	0.0	1.9
3			4.8	3.4	113	3.5	5130	5.1	0.0	2.0
4			4.8	3.4	117	3.8	3130	5.1	0.0	2.1
5			4.8	3.4	120	3.8	2360	5.1	0.0	2.2
6			4.8	3.4	122	3.8	1550	5.1	0.1	2.2

STRAIGHT CUTTING - AL

Aluminum

100A

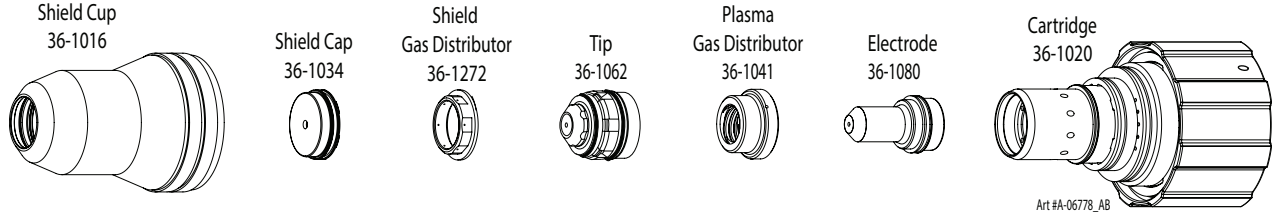
Air Plasma / Air Shield



100A Aluminum (Air/Air)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
16		.064	85	42	154	0.130	500	0.200	0.0	0.103
		0.135	85	42	157	0.130	260	0.200	0.0	0.106
	3/16	0.188	85	42	156	0.130	120	0.325	0.1	0.100
	1/4	.250	85	42	158	0.140	100	0.325	0.2	0.104
	3/8	.375	85	42	162	0.140	75	0.325	0.2	0.107
	1/2	.500	85	42	168	0.140	45	0.325	0.3	0.109
	5/8	.625	85	42	175	0.140	35	0.325	0.4	0.112
	3/4	.750	85	42	180	0.180	35	0.350	1.0	0.121
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
2			5.9	2.9	155	3.3	11430	5.1	0.0	2.6
3			5.9	2.9	156	3.3	8050	5.1	0.0	2.7
4			5.9	2.9	157	3.3	5100	6.4	0.0	2.6
5			5.9	2.9	156	3.3	2980	8.3	0.1	2.6
6			5.9	2.9	158	3.5	2650	8.3	0.2	2.6
8			5.9	2.9	160	3.6	2210	8.3	0.2	2.7
10			5.9	2.9	163	3.6	1790	8.3	0.2	2.7
12			5.9	2.9	167	3.6	1310	8.3	0.3	2.8
15			5.9	2.9	173	3.6	960	8.3	0.4	2.8
20			5.9	2.9	181	4.9	890	9.9	1.0	3.1

STRAIGHT CUTTING - AL

Aluminum
100A
H35 Plasma / N₂ Shield



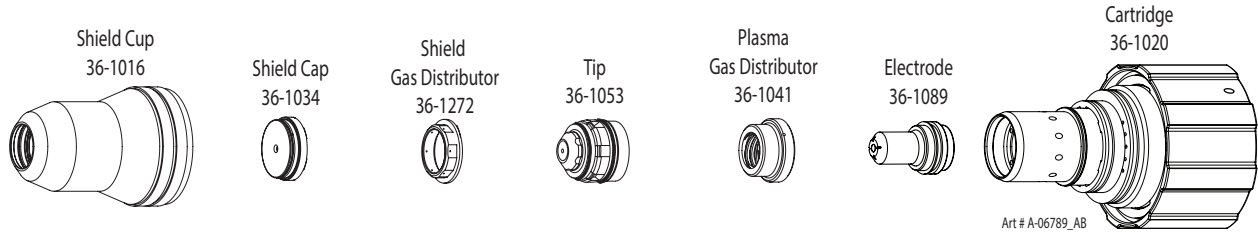
100A Aluminum (H35/N ₂)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N ₂)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/8	0.375	120	50	150	0.188	60	0.350	0.1	0.100
	1/2	0.500	120	50	156	0.188	40	0.350	0.4	0.110
	5/8	0.625	120	50	160	0.188	30	0.350	0.5	0.113
	3/4	0.750	120	50	171	0.250	20	0.350	0.6	0.130
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N ₂)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
10			8.3	3.4	151	4.8	1450	8.9	0.1	2.6
12			8.3	3.4	155	4.8	1130	8.9	0.3	2.7
15			8.3	3.4	159	4.8	830	8.9	0.5	2.8
20			8.3	3.4	174	6.8	430	8.9	0.6	3.4

STRAIGHT CUTTING - AL

Aluminum

100A

N₂ Plasma / H₂O Shield



100A Aluminum (N2/H2O)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N2)	Shield (H2O)						
(ga)	(in)	inch	(PSI)	Ball *	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
		0.135	100	5	148	0.125	170	0.200	0.0	0.072
	3/16	0.188	100	5	158	0.125	80	0.250	0.3	0.080
	1/4	0.250	100	5	158	0.125	60	0.250	0.3	0.085
	3/8	0.375	100	5	161	0.125	50	0.250	0.3	0.086
	1/2	0.500	100	5	170	0.130	35	0.300	0.6	0.091
	5/8	0.625	100	5	180	0.140	20	0.300	0.8	0.120

"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N2)	Shield (H2O)						
(mm)			(Bar)	Ball *	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
4			6.9	5	152	3.2	3350	5.6	0.1	1.9
5			6.9	5	158	3.2	1960	6.4	0.3	2.1
6			6.9	5	158	3.2	1640	6.4	0.3	2.1
8			6.9	5	160	3.2	1390	6.4	0.3	2.2
10			6.9	5	162	3.2	1210	6.5	0.3	2.2
12			6.9	5	168	3.3	970	7.3	0.5	2.3
15			6.9	5	177	3.5	610	7.6	0.7	2.8

* Ball setting for shield water is set using a line pressure of 55 PSI / 3.8 Bar

NOTES:

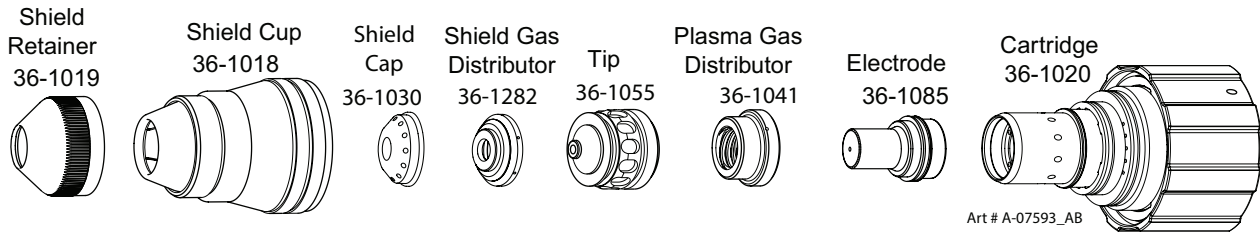
1. Shield Cap life is poor (icicles around orifice and substantial erosion of orifice).
2. All cuts have small rough lip on bottom of cut edge.
3. Ohmic Sense Height Control does not work well with H2O (water shield) secondary. It is not consistent and many times torch will not transfer due to wrong Pierce height.

STRAIGHT CUTTING - AL

Aluminum

200A

Air Plasma / Air Shield



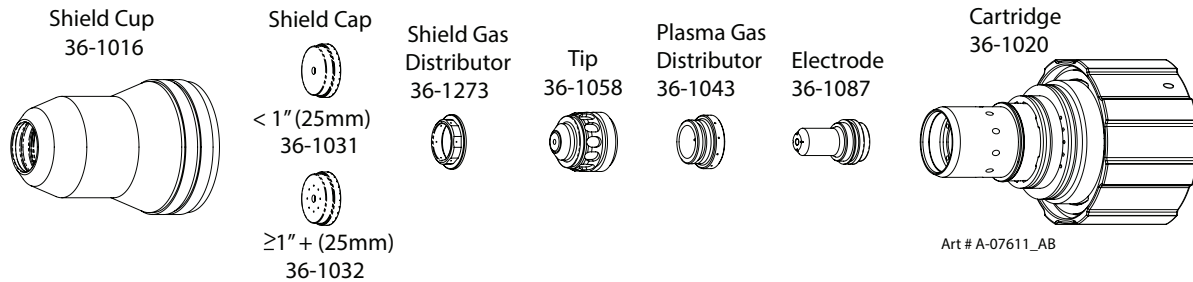
200A Aluminum Air/Air										
"Material Thickness"			Cut Flow Pressures		Arc Volt-age	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/16	0.1875	90	70	170	0.140	225	0.300	0.0	0.173
	1/4	0.250	90	70	174	0.140	195	0.300	0.1	0.177
	3/8	0.375	90	70	179	0.140	150	0.300	0.2	0.173
	1/2	0.500	90	70	181	0.140	115	0.350	0.3	0.166
	5/8	0.625	90	70	182	0.140	90	0.400	0.4	0.164
	3/4	0.750	90	70	185	0.160	70	0.400	0.5	0.171
	7/8	0.875	90	70	189	0.170	55	0.450	0.7	0.175
	1	1.000	90	70	196	0.180	40	0.500	1.3	0.197
	1 1/4	1.250	90	70	205	0.200	25	0.500	3.0	0.185
	1 1/2	1.500	90	70	210	0.200	15	Edge Start		0.198
	2	2.000	90	70	213	0.200	8	Edge Start		0.220
200A Aluminum Air/Air										
"Material Thickness"			Cut Flow Pressures		Arc Volt-age	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
5			6.2	4.8	171	3.6	5600	7.6	0.0	4.4
6			6.2	4.8	173	3.6	5120	7.6	0.1	4.5
8			6.2	4.8	177	3.6	4360	7.6	0.2	4.4
10			6.2	4.8	179	3.6	3680	7.8	0.2	4.4
12			6.2	4.8	181	3.6	3120	8.6	0.3	4.3
15			6.2	4.8	182	4.1	2460	9.8	0.4	4.2
20			6.2	4.8	186	4.5	1660	10.5	0.6	4.4
25			6.2	4.8	195	5.1	1060	12.5	1.2	4.6
32			6.2	4.8	205	5.1	630	12.7	2.9	4.7
38			6.2	4.8	210	5.1	390	Edge Start		5.0
50			6.2	4.8	213	5.1	210	Edge Start		5.6

STRAIGHT CUTTING - AL

Aluminum

200A

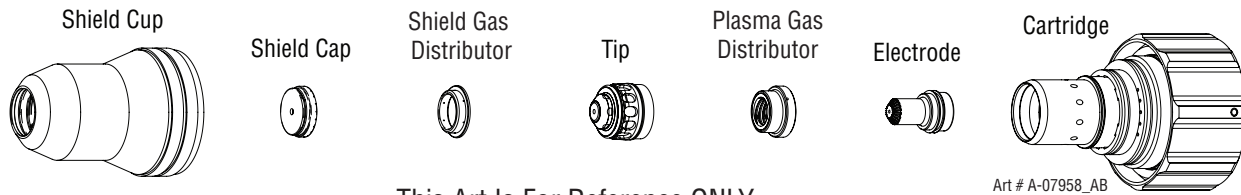
H35 Plasma / N₂ Shield



200A Aluminum (H35/N2)										
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height*	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N2)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	1/2	0.5	70	100	155	0.300	150	0.350	0.2	0.163
	5/8	0.625	70	100	160	0.300	110	0.350	0.3	0.169
	3/4	0.75	70	100	166	0.300	70	0.400	0.4	0.177
	7/8	0.875	70	100	171	0.350	55	0.450	0.5	0.192
	1	1	70	100	177	0.350	40	Edge Start		0.196
	1 1/4	1.25	70	100	181	0.350	32	Edge Start		0.180
	1 1/2	1.5	70	100	188	0.350	25	Edge Start		0.190
	2	2	70	100	190	0.350	15	Edge Start		0.195
"Material Thickness"			Cut Flow Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height*	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (H35)	Shield (N2)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
12			4.8	6.9	155	7.6	3810	7.6	0.2	4.3
15			4.8	6.9	159	7.6	3070	8.9	0.3	4.3
20			4.8	6.9	167	8.0	1660	10.5	0.4	4.6
25			4.8	6.9	176	8.9	1060	Edge Start		5.0
32			4.8	6.9	181	8.9	810	Edge Start		4.6
38			4.8	6.9	188	8.9	640	Edge Start		4.8
50			4.8	6.9	190	8.9	400	Edge Start		4.9
.* Lock pierce height between 0.5" to 1" to avoid torch hitting the pierce metal puddle										
Slightly decreasing the shield gas pressure minimizes dross on aluminum cutting										

STRAIGHT CUTTING - AL

Aluminum 200A N₂ Plasma / H₂O Shield



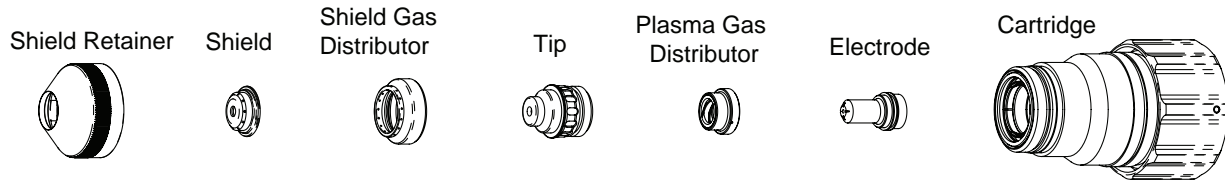
This Art Is For Reference ONLY

Shield Cup			Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge		
36-1016			36-1039	36-1273	36-1064	36-1046	36-1089	36-1020		
"Material Thickness"			Cut Flows / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N2)	Shield (H2O)*						
(ga)	(in)	inch	(PSI)	(Ball)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	1/2	0.500	70	5	156	0.250	110	0.300	0.3	0.133
	5/8	0.625	70	5	165	0.250	100	0.300	0.4	0.140
	3/4	0.750	110	5	170	0.250	70	0.300	0.6	0.138
	7/8	0.875	110	5	178	0.300	60	0.350	0.8	0.152
	1	1.000	110	5	188	0.350	40	0.400	0.9	0.165
	1 1/4	1.250	110	5	197	0.350	30	0.400	1.9	0.175
	1 1/2	1.500	110	5	198	0.350	20	Edge Start		0.181
	1 3/4	1.750	110	5	198	0.350	18	Edge Start		0.188
	2	2.000	110	5	198	0.350	15	Edge Start		0.196
"Material Thickness"			Cut Flows / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (N2)	Shield (H2O)*						
(mm)			(Bar)	(Ball)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
	12	0	4.9	5	155	6.4	2800	7.6	0.3	3.3
	15	0	4.9	5	163	6.4	2500	7.6	0.4	3.5
	20	0	7.6	5	171	6.4	1700	7.6	0.6	4.0
	25	0	7.6	5	187	8.0	1000	10.2	0.9	4.2
	32	0	7.6	5	197	8.9	750	10.2	1.9	4.4
	38	0	7.6	5	198	8.9	500	Edge Start		4.6
	44	0	7.6	5	198	8.9	450	Edge Start		4.8
	50	0	7.6	5	198	8.9	380	Edge Start		5.0

"BOLD TYPE indicates maximum piercing parameters. BOLD ITALIC indicates edge starts only.
Requires CCM version 3.4 or later. Requires GCM version 3.2 or later."
* Pressure of the water supply line should be regulated at 55 PSI / 3.4 Bar 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.

STRAIGHT CUTTING - AL

Aluminum 300A Air Plasma / Air Shield



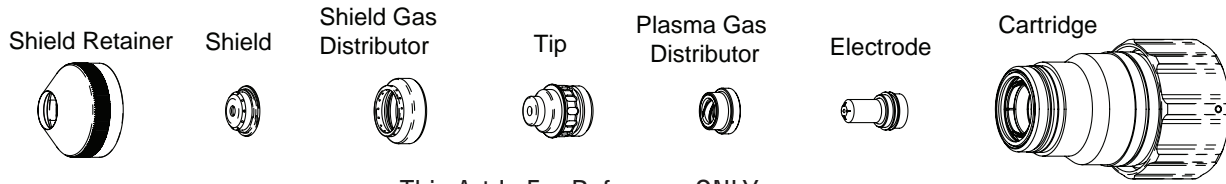
This Art Is For Reference ONLY

Shield Retainer		Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge			
36-1021		36-1037	36-1283	36-1050	36-1044	36-1088	36-1022			
"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(ga)	(in)	inch	(PSI)	(PSI)	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)
	3/4	0.750	90	80	179	0.200	90	0.350	0.4	0.220
	7/8	0.875	90	80	179	0.200	75	0.400	0.5	0.230
	1	1.000	90	80	180	0.200	70	0.400	0.7	0.240
	1.25	1.250	90	80	194	0.250	45	0.450	1.5	0.270
	1.5	1.500	90	80	200	0.250	20	0.450	2.2	0.300
	1.75	1.750	90	80	210	0.250	19	Edge Start		0.300
	2	2.000	90	80	220	0.250	18	Edge Start		0.300
"Material Thickness"			Cut Flow Rates / Pressures		Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"
			Plasma (Air)	Shield (Air)						
(mm)			(Bar)	(Bar)	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)
20	0	0	6.2	5.5	179	5.1	2290	8.9	0.4	5.6
25	0	0	6.2	5.5	180	5.1	1780	10.2	0.7	6.1
30	0	0	6.2	5.5	192	6.4	1140	11.4	1.5	7.0
40	0	0	6.2	5.5	201	6.4	510	11.4	2.2	7.6
50	0	0	6.2	5.5	219	6.4	460	Edge Start		7.6

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

STRAIGHT CUTTING - AL

Aluminum 300A N₂ Plasma / H₂O Shield



This Art Is For Reference ONLY

Art # A-07917_AC

Shield Retainer			Shield Cap		Shield Gas Distributor			Tip		Plasma Gas Distributor			Electrode		Cartridge	
36-1015			36-1038		36-1284-			36-1063		36-1048			36-1089		36-1022	
"Material Thickness"			Cut Flow Rates / Pressures			Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"					
			Plasma (N ₂)	Shield (H ₂ O)*												
(ga)	(in)	inch	psi	Ball	psi	Volts	"(in) ±0.005"	(ipm)	(in)	(sec)	(in)					
	1/2	0.500	100	8	55	160	0.200	120	0.300	0.3	0.161					
	5/8	0.625	100	8	55	164	0.200	100	0.300	0.4	0.165					
	3/4	0.750	100	8	55	170	0.250	80	0.500	0.5	0.174					
	7/8	0.875	100	8	55	173	0.250	70	0.500	0.6	0.175					
	1	1.000	100	8	55	175	0.250	60	0.500	0.7	0.190					
	1 1/4	1.250	100	8	55	180	0.250	40	0.500	1.2	0.185					
	1 1/2	1.500	100	8	55	184	0.300	25	Edge Start		0.190					
	1 3/4	1.750	100	8	55	196	0.300	15	Edge Start		0.213					
	2	2.000	100	8	55	200	0.300	10	Edge Start		0.205					
"Material Thickness"			Cut Flow Rates / Pressures			Arc Voltage	Torch Working Height	"Travel Speed"	Initial Piercing Height	Pierce Delay	"Kerf Width @ Rec. Speed"					
			Plasma (N ₂)	Shield (H ₂ O)*												
(mm)			bar	Ball	bar	Volts	"(mm) ±0.1"	(mm/min)	(mm)	(sec)	(mm)					
15	0	0	6.9	8	3.8	163	5.1	2680	7.6	0.4	4.2					
20	0	0	6.9	8	3.8	171	6.4	1960	12.7	0.5	4.4					
25	0	0	6.9	8	3.8	175	6.4	1560	12.2	0.7	4.8					
32	0	0	6.9	8	3.8	180	6.4	1000	0.2	1.2	4.7					
38	0	0	6.9	8	3.8	184	7.6	640	Edge Start		4.8					
44	0	0	6.9	8	3.8	195	7.6	400	Edge Start		5.4					
50	0	0	6.9	8	3.8	199	7.6	270	Edge Start		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: Water source used for shield must be demineralized.

STRAIGHT CUTTING - AL

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Auto-Cut Basic					
Material	Gases Used	Consumable Description	200A	100A	55A

Mild Steel	O2/Air Air/Air	Electrode	35-1085	35-1071	35-1069
		Plasma Gas Distributor	35-1041	35-1041	35-1041
		Tip	35-1055 Air/Air	35-1053	35-1051
			35-1056 O2/Air		
		Shield Gas Distributor	35-1280 Air/Air	35-1272	35-1272
			35-1281 O2/Air		
		Shield Cap	35-1028 Air/Air	35-1027	35-1025
			35-1029 O2/Air		
Shield Retainer	35-1019				
Shield Cup	35-1018	35-1016	35-1016		
Cartridge Assy	35-1020	35-1020	35-1020		

Stainless Steel/ Aluminum	H35/N2 N2/H2O Air/Air	Electrode	35-1087 H35/N2	35-1080 H35/N2	35-1078
			35-1089 N2/H2O	35-1089 N2/H2O	
			35-1085 Air/Air	35-1071 Air/Air	
		Plasma Gas Distributor	35-1043 H35/N2	35-1041	35-1041
			35-1041 Air/Air		
		Tip	35-1058 H35/N2	35-1062 H35/N2	35-1060
			35-1064 N2/H2O		
			35-1055 Air/Air		
		Shield Gas Distributor	35-1273	35-1272	35-1272
			35-1282 Air/Air		
		Shield Cap	35-1031 H35/N2 < 25mm	35-1034	35-1034
			35-1032 H35/N2 > 25mm		
			35-1039 N2/H2O		
35-1030 Air/Air					
Shield Retainer	35-1019 Air/Air				
Shield Cup	35-1018 Air/Air	35-1016	35-1016		
	35-1016 Ar/H2,N2/H2O				
Cartridge Assy	35-1020	35-1020	35-1020		

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Auto-Cut 300

Material	Gases Used	Consumable Description	300A	200A	100A	55A
Mild Steel	O2/Air Air/Air	Electrode	35-1088 Air/Air	35-1085	35-1071	35-1069
		Plasma Gas Distributor	35-1044 Air/Air	35-1041	35-1041	35-1041
		Tip	35-1050 Air/Air	35-1055 Air/Air 35-1056 O2/Air	35-1053	35-1051
		Shield Gas Distributor	35-1283 Air/Air	35-1280 Air/Air 35-1281 O2/Air	35-1272	35-1272
		Shield Cap	35-1037 Air/Air	35-1028 Air/Air 35-1029 O2/Air	35-1027	35-1025
		Shield Retainer	35-1021	35-1019		
		Shield Cup	35-1017	35-1018	35-1016	35-1016
		Cartridge Assy	35-1022	35-1020	35-1020	35-1020

Stainless Steel/ Aluminum	H35/N2 N2/H2O Air/Air	Electrode	35-1088 Air/Air	35-1087 H35/N2 35-1089 N2/H2O 35-1085 Air/Air	35-1080 H35/N2 35-1089 N2/H2O 35-1071 Air/Air	35-1078
		Plasma Gas Distributor	35-1044 Air/Air	35-1043 H35/N2 35-1041 Air/Air	35-1041	35-1041
		Tip	35-1050 Air/Air	35-1058 H35/N2 35-1064 N2/H2O 35-1055 Air/Air	35-1062 H35/N2 35-1053	35-1060
		Shield Gas Distributor	35-1283 Air/Air	35-1273 35-1282 Air/Air	35-1272	35-1272
		Shield Cap	35-1037 Air/Air	35-1031 H35/N2 < 25mm 35-1032 H35/N2 > 25mm 35-1039 N2/H2O	35-1034 35-1027 Air/Air	35-1034
		Shield Retainer	35-1021 Air/Air	35-1030 Air/Air		
		Shield Cup	35-1017	35-1019 Air/Air 35-1018 Air/Air	35-1016	35-1016
		Cartridge Assy	35-1022	35-1016 Air/H2,N2/H2O 35-1020	35-1020	35-1020

Art# A-08449

TORCH REPLACEMENT PARTS

Returns

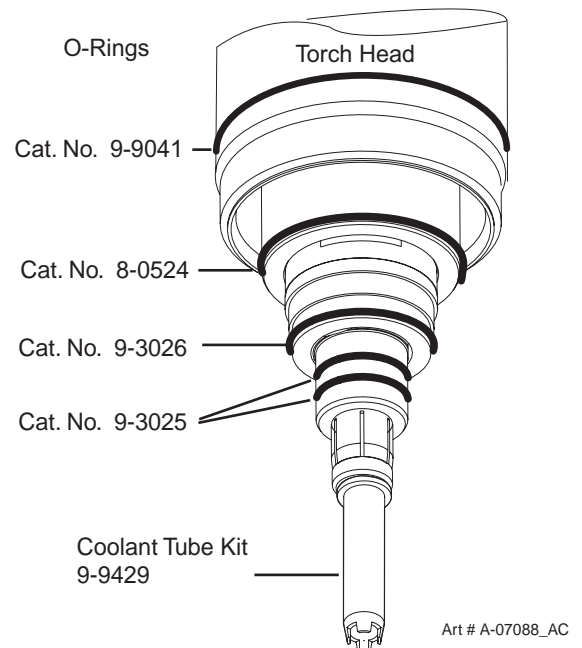
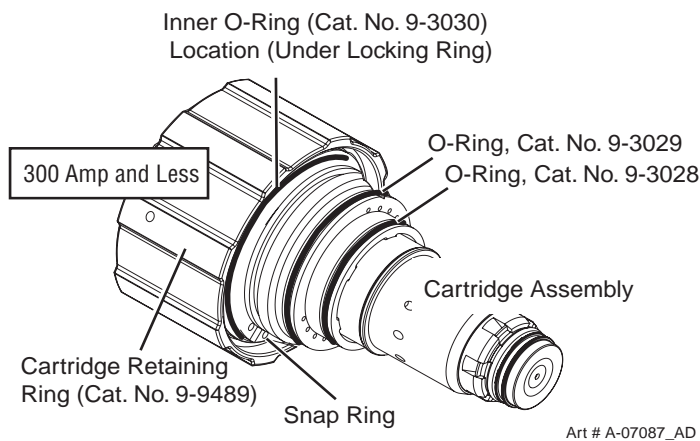
If a product must be returned for service, contact your authorized distributor. Materials returned without proper authorization will not be accepted.

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.

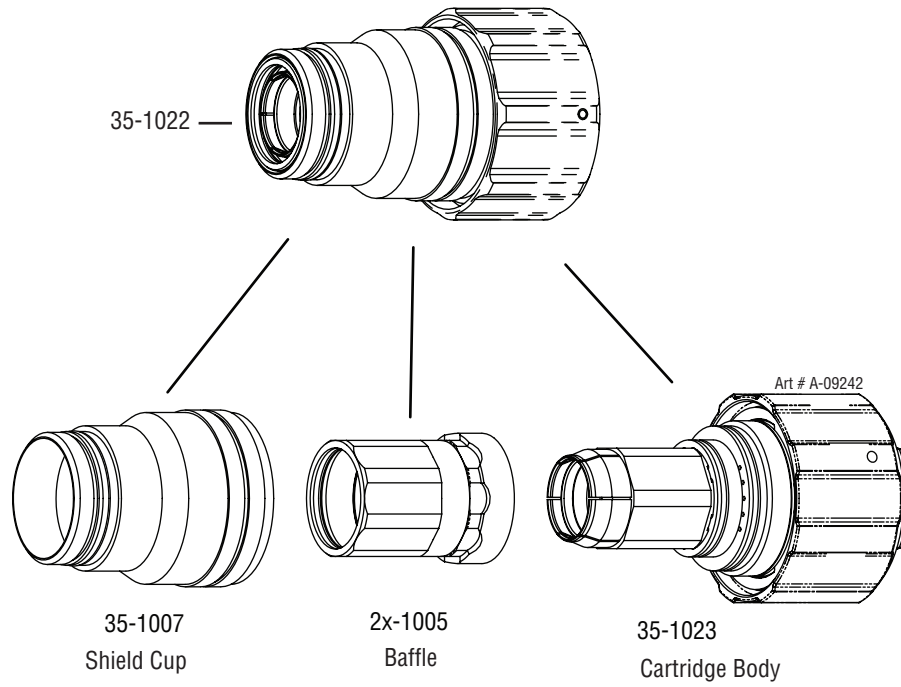
Refer to parts diagrams within the body of the manual for consumable parts and replacement O-Ring catalog numbers.

Qty.	Description	Catalog Number
1	XT-301 Torch w/ 25' / 7.6 m Leads, w/ 100-Amp Mild Steel Consumables	2-7000
1	XT-301 Torch w/ 35' / 10.6 m Leads, w/ 100-Amp Mild Steel Consumables	2-7001
1	XT-301 Torch w/ 50' / 15.2 m Leads, w/ 100-Amp Mild Steel Consumables	2-7002
1	XT-301 Torch w/ 75' / 22.9 m Leads, w/ 100-Amp Mild Steel Consumables	2-7003
1	XT-301 Torch w/ 100' / 30.5 m Leads, w/ 100-Amp Mild Steel Consumables	2-7004
1	O-Ring Lubricant (Christo-Lube MCG-129)	9-4893
1	Water Shield Regulator	8-6118
1	Consumables Tool	9-9431
1	Torch Cartridge (includes Consumables Tool)	35-1020
1	Shield Cup (all applications except 200-A Mild Steel)	35-1016

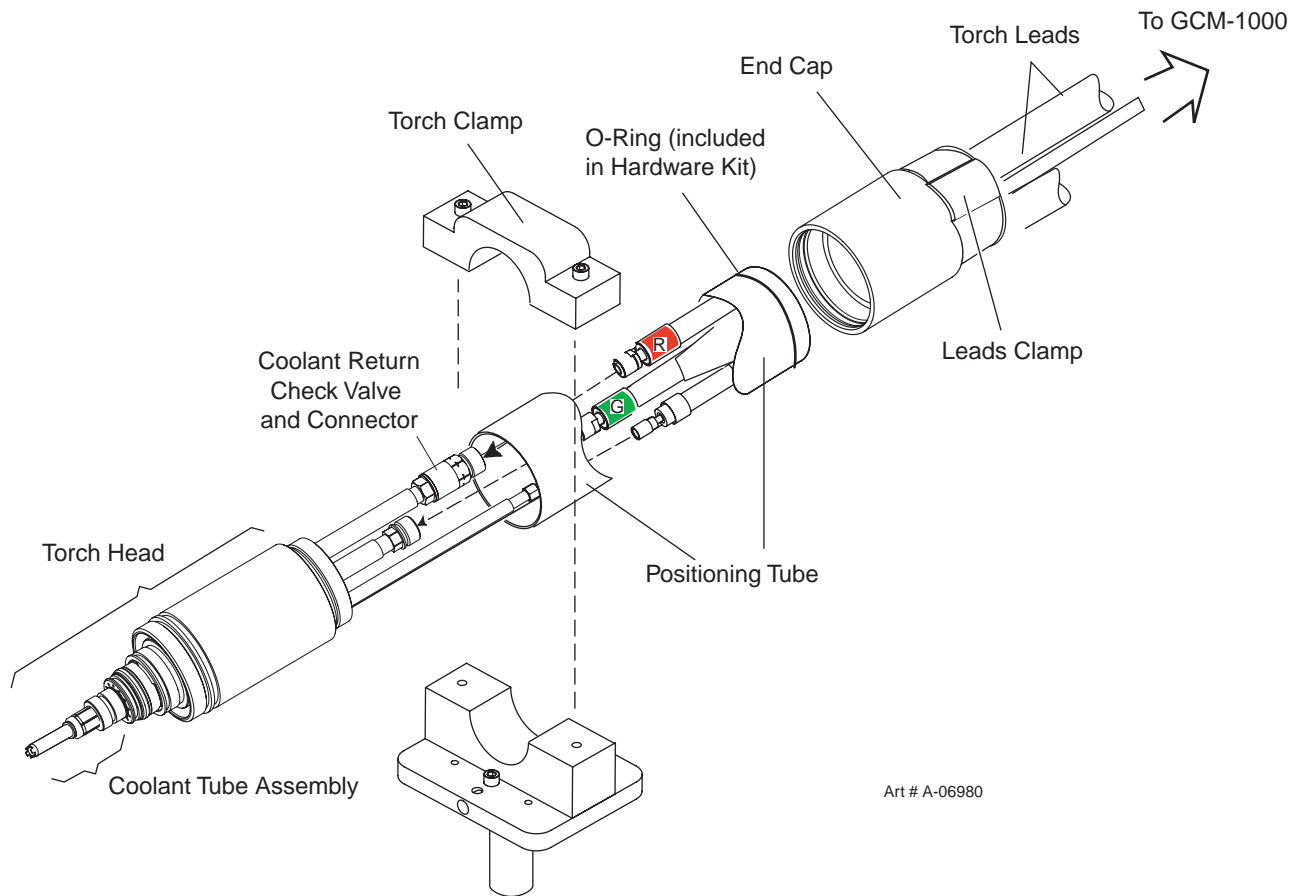


Cartridge Assembly (35-1022) Consumables

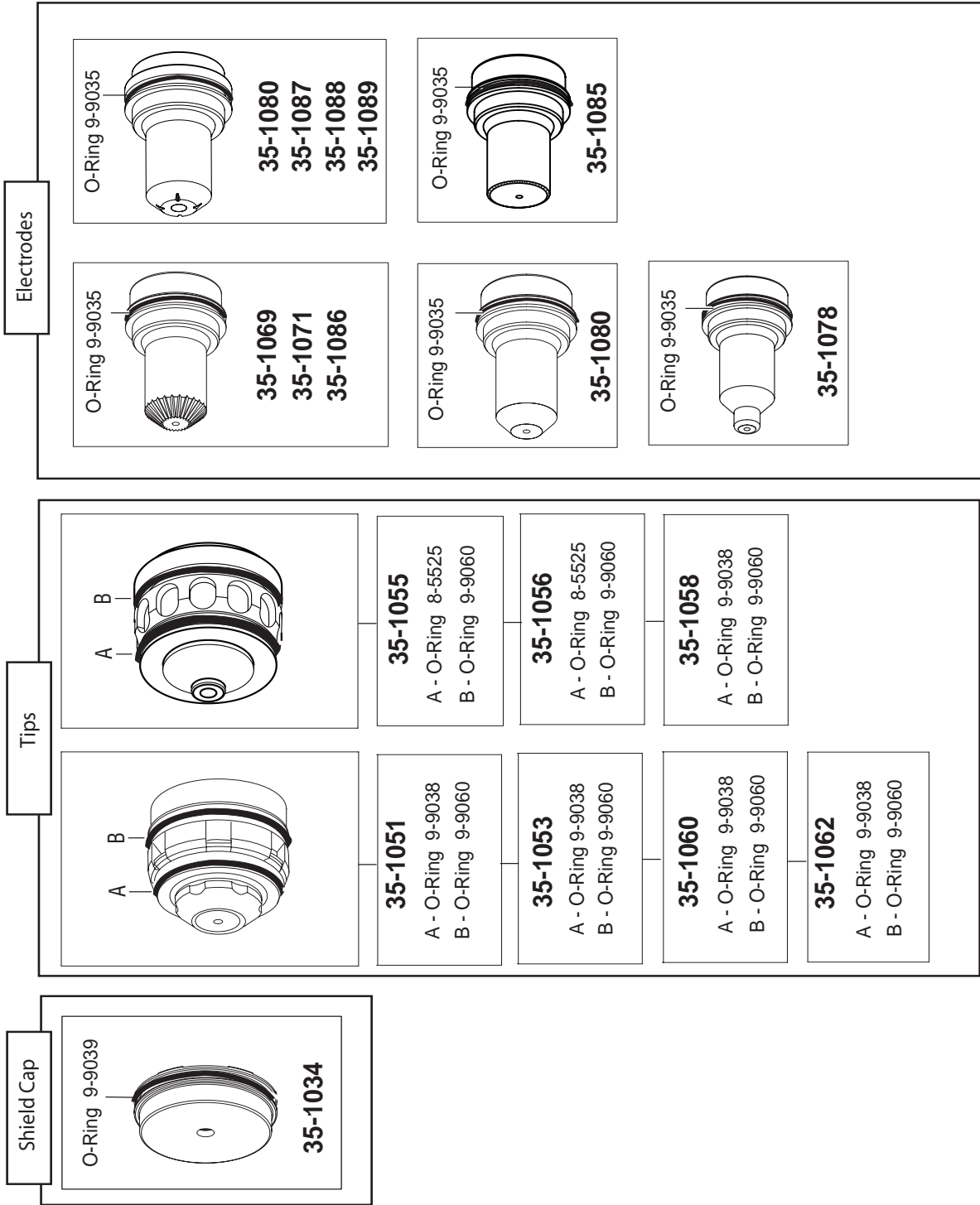
Cartridge Assembly



Qty.	Description	Catalog Number
1	XT-301 Torch Head Kit	35-1002
1	Torch Positioning Tube	9-4700
1	Torch Clamp Assembly	9-9336
1	Coolant Tube Kit	9-9429
1	Coolant Check Valve Kit	9-4846
1	Mounting Tube Hardware Kit (includes Mounting Tube O-ring)	9-4847
1	Ohmic Clip Kit	9-9414



Consumables O-Ring Locations and Catalog Numbers



Art # A-07250

PATENT INFORMATION

XT™-301 Plasma Cutting Torch Patents

The following parts are covered under U.S. and Foreign Patents as follows:

Catalog #	Description	Patent(s)
35-1020 Pending	Cartridge	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1022 Pending	Cartridge	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1068 D517577 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1069 D517576 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1070 D517576 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1071 D517576 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1072 D517576 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1077 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566
35-1078 6998566 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; D505963; 6989505;
35-1079 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566
35-1080 D517577 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1085 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566
35-1086 D517576 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1087 D517577 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1088 D517576 Other Pat(s) Pending	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566;
35-1040 Pending	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1041 Pending	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1043 Pending	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1044 Pending	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1046 Pending	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1024 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1025 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1026 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1027 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1034 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1028 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1029 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1030 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)

35-1031 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1032 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1033 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1035 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1036 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1037 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1039 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1275 Pending	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1016 Pending	Shield Cup	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1018 Pending	Shield Cup	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1082 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1272 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1273 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1274 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1280 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1281 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1282 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1283 Pending	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1019 Pending	Shield Retainer	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1021 Pending	Shield Retainer	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s)
35-1050 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s) Pending
35-1051 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s) Pending
35-1052 D519135; D524,336 Ot	Tip her	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s) Pending

XT™-301 Plasma Cutting Torch Patents

The following parts are covered under U.S. and Foreign Patents as follows:

Catalog #	Description	Patent(s)
35-1053 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s)Pending
35-1054 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s) Pending
35-1055 Other Pat(s) Pending	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600
35-1056 Other Pat(s) Pending	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600
35-1057 Other Pat(s) Pending	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600
35-1058 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s)Pending
35-1060 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s) Pending
35-1061 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s) Pending
35-1062 D519135; D524,336 Other	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; Pat(s)Pending
35-1064 Other Pat(s) Pending	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600
35-1001 7071443 Other Pat(s) Pending	Torch Head	US Pat No(s) 6946616; 6919526; 6852944; 6989505;

The following parts are licensed under U.S. Patent No. 5,120,930 and 5,132,512:

Catalog #	Description
35-1027	Shield Cap
35-1028	Shield Cap
35-1029	Shield Cap
35-1030	Shield Cap
35-1032	Shield Cap

NOTE

This manual may refer to some or all of the parts listed.

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STATEMENT OF WARRANTY

LIMITED WARRANTY: Thermal Dynamics® Corporation (hereinafter "Thermal") warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Thermal products as stated below, Thermal shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Thermal's sole option, of any components or parts of the product determined by Thermal to be defective.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: Thermal shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermal with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based.

THIS WARRANTY BECOMES INVALID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMAL PRODUCT.

THIS WARRANTY IS INVALID IF THE PRODUCT IS SOLD BY NON-AUTHORIZED PERSONS.

The limited warranty periods for this product shall be: A maximum of three (3) years from date of sale to an authorized distributor and a maximum of two (2) years from date of sale by such distributor to the Purchaser, and with further limitations on such two (2) year period (see chart below).

	Parts	<u>Labor</u>
Auto-Cut XT™ and Ultra-Cut XT™ Power Supplies and Components	2 Years	1 Year
<u>Torch And Leads</u>		
XT™300 / XT™-301 Torch (Excluding Consumable Parts)	1 Year	1 Year
<u>Repair/Replacement Parts</u>	90 Days	90 Days

Warranty repairs or replacement claims under this limited warranty must be submitted by an authorized Thermal Dynamics® repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the customer. All returned goods shall be at the customer's risk and expense. This warranty supersedes all previous Thermal warranties.

Effective October 23, 2012



Thermal Dynamics / thermal-dynamics.com

