

## 8. TORCH OPERATION

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### 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

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*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 contents of material; cutting table capabilities & accuracy.

#### NOTE

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*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 psi(g) = 14.7 psi(a) (1 atmosphere).

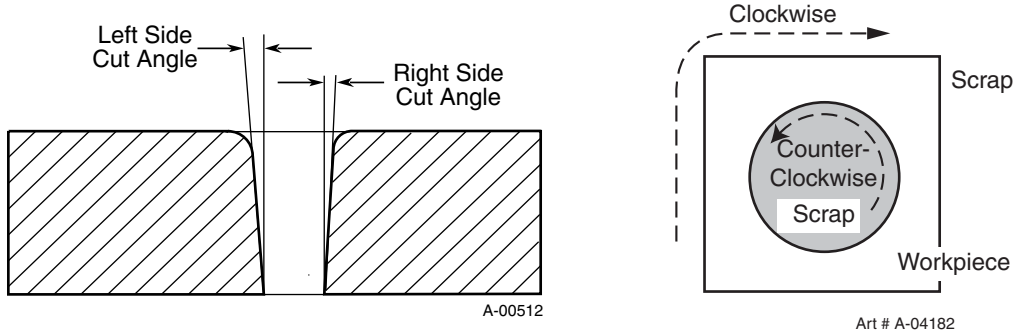
Ball settings are at the center of the gauge ball.

## 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.

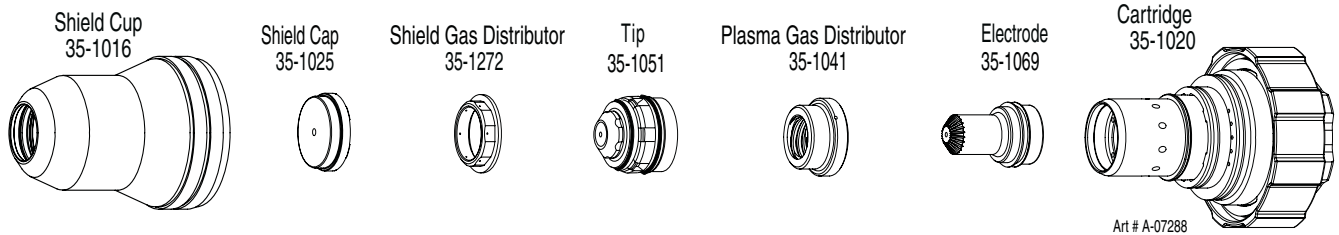
## Underwater Cutting

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.

# Mild Steel

## 55A

### Air Plasma / Air Shield



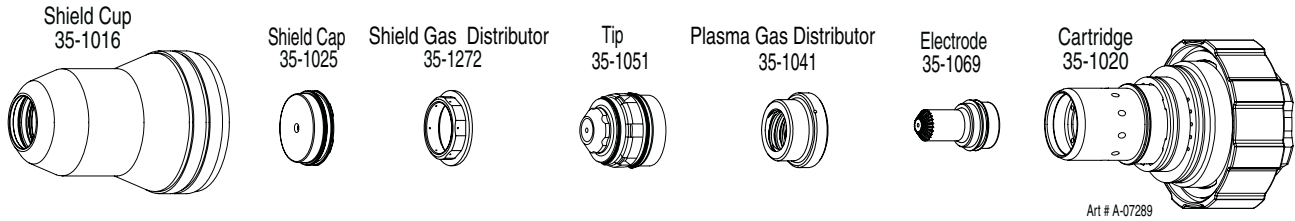
55A Mild Steel (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
21		0.033	70	58	90	32	90	165	0.188	500	0.200	0.1	0.079
16		0.060	70	58	90	32	90	165	0.188	300	0.200	0.1	0.086
10		0.135	70	58	90	84	90	168	0.188	190	0.200	0.2	0.079
	3/16	0.188	70	58	90	84	90	168	0.188	130	0.250	0.3	0.089
	1/4	0.250	70	58	90	84	90	171	0.188	95	0.250	0.3	0.090

55A Mild Steel (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	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	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
1		4.8	58	6.2	32	6.2	165	4.8	11500	5.1	0.1	2.0
2		4.8	58	6.2	32	6.2	166	4.8	6920	5.1	0.1	2.1
3		4.8	58	6.2	84	6.2	167	4.8	5460	5.1	0.2	2.0
4		4.8	58	6.2	84	6.2	168	4.8	4180	5.6	0.2	2.1
5		4.8	58	6.2	84	6.2	168	4.8	3180	6.4	0.3	2.3
6		4.8	58	6.2	84	6.2	170	4.8	2610	6.4	0.3	2.3

# Mild Steel

## 55A

### O<sub>2</sub> Plasma / Air Shield



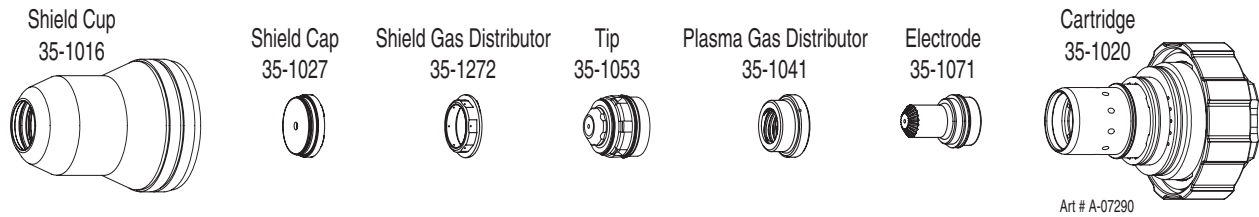
55A Mild Steel (O <sub>2</sub> /Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (O <sub>2</sub> )		Shield (Air)							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
21		0.033	90	65	120	26	90	168	0.125	600	0.200	0.0	0.073
16		0.060	90	65	120	26	90	168	0.125	400	0.200	0.0	0.071
10		0.135	90	65	120	26	90	142	0.125	180	0.200	0.2	0.083
	3/16	0.188	90	65	120	26	90	145	0.125	120	0.200	0.2	0.081
	1/4	0.250	90	65	120	26	90	147	0.125	85	0.200	0.3	0.086

55A Mild Steel (O <sub>2</sub> /Air)												
Material Thickness		Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (O <sub>2</sub> )		Shield (Air)							
(mm)		bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
1		6.2	65	8.3	26	6.2	168	3.2	14040	5.1	0.0	1.8
2		6.2	65	8.3	26	6.2	162	3.2	8760	5.1	0.0	1.9
3		6.2	65	8.3	26	6.2	148	3.2	5830	5.1	0.2	2.0
4		6.2	65	8.3	26	6.2	143	3.2	3930	5.1	0.2	2.1
5		6.2	65	8.3	26	6.2	145	3.2	2920	5.1	0.2	2.1
6		6.2	65	8.3	26	6.2	147	3.2	2360	5.1	0.3	2.2

# Mild Steel

## 100A

### Air Plasma / Air Shield



100A Mild Steel (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	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	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
16		0.060	74	58	90	90	90	150	0.110	600	0.250	0.1	0.072
10		0.135	74	58	90	90	90	150	0.110	300	0.250	0.2	0.065
	3/16	0.188	74	58	90	90	90	150	0.110	210	0.250	0.3	0.073
	1/4	0.250	74	58	90	90	90	155	0.120	150	0.300	0.3	0.078
	3/8	0.375	74	58	90	90	90	155	0.130	85	0.300	0.3	0.091
	1/2	0.500	74	58	90	43	90	157	0.140	75	0.300	0.3	0.095
	5/8	0.625	74	58	90	43	90	165	0.140	55	0.350	0.5	0.099
	<b>3/4</b>	<b>0.750</b>	<b>74</b>	<b>58</b>	<b>90</b>	<b>43</b>	<b>90</b>	<b>168</b>	<b>0.150</b>	<b>30</b>	<b>0.350</b>	<b>0.6</b>	<b>0.120</b>
	<b>1</b>	<b>1.000</b>	<b>74</b>	<b>58</b>	<b>90</b>	<b>43</b>	<b>90</b>	<b>180</b>	<b>0.200</b>	<b>20</b>	<b>Edge Start</b>		<b>0.112</b>

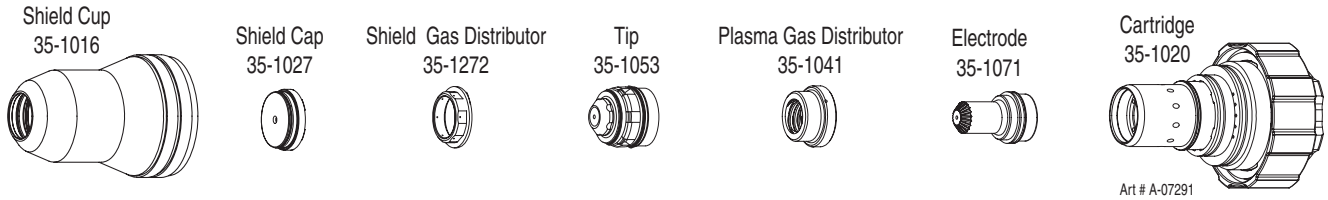
100A Mild Steel (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (Air)		Shield (Air)							
(mm)		bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
2		5.1	58	6.2	90	6.2	150	2.8	13340	6.4	0.1	1.8
3		5.1	58	6.2	90	6.2	150	2.8	9340	6.4	0.2	1.7
4		5.1	58	6.2	90	6.2	150	2.8	6650	6.4	0.2	1.7
5		5.1	58	6.2	90	6.2	151	2.8	5120	6.5	0.3	1.9
6		5.1	58	6.2	90	6.2	154	3.0	4150	7.3	0.3	2.0
8		5.1	58	6.2	90	6.2	155	3.2	2950	7.6	0.3	2.2
10		5.1	58	6.2	90	6.2	155	3.3	2120	7.6	0.3	2.3
12		5.1	58	6.2	45	6.2	157	3.5	1960	7.6	0.3	2.4
15		5.1	58	6.2	45	6.2	163	3.6	1540	8.5	0.4	2.5
	<b>20</b>	<b>5.1</b>	<b>58</b>	<b>6.2</b>	<b>45</b>	<b>6.2</b>	<b>170</b>	<b>4.0</b>	<b>720</b>	<b>9.5</b>	<b>0.6</b>	<b>3.0</b>
	<b>25</b>	<b>5.1</b>	<b>58</b>	<b>6.2</b>	<b>45</b>	<b>6.2</b>	<b>179</b>	<b>5.0</b>	<b>520</b>	<b>Edge Start</b>		<b>2.9</b>

**Bold type** indicates maximum piercing parameters. **Bold italic** indicates edge starts only.

# Mild Steel

## 100A

### O<sub>2</sub> Plasma / Air Shield



100A Mild Steel (O <sub>2</sub> /Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (O <sub>2</sub> )		Shield (Air)							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
16		0.060	74	56	120	90	90	127	0.110	500	0.250	0.1	0.071
10		0.135	74	56	120	90	90	134	0.110	240	0.250	0.2	0.081
	3/16	0.188	74	56	120	90	90	128	0.120	185	0.250	0.3	0.073
	1/4	0.250	74	56	120	90	90	130	0.120	130	0.300	0.3	0.095
	3/8	0.375	74	56	120	90	90	138	0.130	80	0.300	0.3	0.113
	1/2	0.500	74	56	120	90	90	138	0.140	57	0.300	0.3	0.113
	<b>5/8</b>	<b>0.625</b>	<b>74</b>	<b>56</b>	<b>120</b>	<b>90</b>	<b>90</b>	<b>144</b>	<b>0.140</b>	<b>45</b>	<b>0.350</b>	<b>0.5</b>	<b>0.111</b>
	<b>3/4</b>	<b>0.750</b>	<b>74</b>	<b>56</b>	<b>120</b>	<b>90</b>	<b>90</b>	<b>150</b>	<b>0.150</b>	<b>25</b>	<b>Edge Start</b>		<b>0.138</b>
	<b>1</b>	<b>1.000</b>	<b>74</b>	<b>56</b>	<b>120</b>	<b>90</b>	<b>90</b>	<b>164</b>	<b>0.200</b>	<b>10</b>	<b>Edge Start</b>		<b>0.140</b>

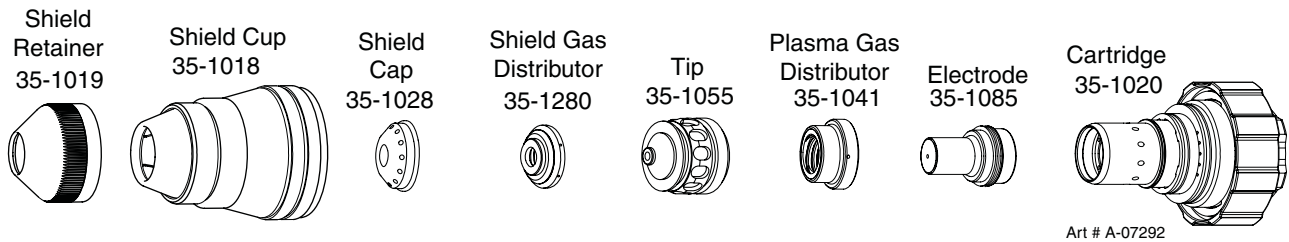
100A Mild Steel (O <sub>2</sub> /Air)												
Material Thickness		Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (O <sub>2</sub> )		Shield (Air)							
(mm)		bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
2		5.1	56	8.3	90	6.2	129	2.8	11050	6.4	0.1	1.9
3		5.1	56	8.3	90	6.2	132	2.8	7580	6.4	0.2	2.0
4		5.1	56	8.3	90	6.2	131	2.9	5500	6.4	0.2	2.0
5		5.1	56	8.3	90	6.2	128	3.1	4500	6.5	0.3	1.9
6		5.1	56	8.3	90	6.2	130	3.1	3610	7.3	0.3	2.3
8		5.1	56	8.3	90	6.2	134	3.2	2640	7.6	0.3	2.7
10		5.1	56	8.3	90	6.2	138	3.3	1950	7.6	0.3	2.9
12		5.1	56	8.3	90	6.2	138	3.5	1580	7.6	0.3	2.9
<b>15</b>		<b>5.1</b>	<b>56</b>	<b>8.3</b>	<b>90</b>	<b>6.2</b>	<b>142</b>	<b>3.6</b>	<b>1230</b>	<b>8.5</b>	<b>0.4</b>	<b>2.8</b>
<b>20</b>		<b>5.1</b>	<b>56</b>	<b>8.3</b>	<b>90</b>	<b>6.2</b>	<b>152</b>	<b>4.0</b>	<b>580</b>	<b>Edge Start</b>		<b>3.5</b>
<b>25</b>		<b>5.1</b>	<b>56</b>	<b>8.3</b>	<b>90</b>	<b>6.2</b>	<b>163</b>	<b>5.0</b>	<b>280</b>	<b>Edge Start</b>		<b>3.6</b>

**Bold type** indicates maximum piercing parameters. **Bold italic** indicates edge starts only.

# Mild Steel

## 200A

### Air Plasma / Air Shield



200A Mild Steel (Air/Air)														
Material Thickness			Pre Flow Pressure (Air)	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	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)	
	1/4	0.250	80	60	90	See Note	90	163	0.140	185	0.300	0	0.096	
	3/8	0.375	80	60	90		90	160	0.140	130	0.300	0.1	0.131	
	1/2	0.500	80	60	90		90	162	0.140	100	0.300	0.3	0.150	
	5/8	0.625	80	60	90		90	164	0.140	75	0.300	0.4	0.158	
	3/4	0.750	80	60	90		90	168	0.180	60	0.350	0.5	0.176	
	1	1.000	80	60	90		90	177	0.200	35	0.500	1.5	0.189	
	<b>1 1/4</b>	<b>1.250</b>	<b>80</b>	<b>60</b>	<b>90</b>		<b>90</b>	<b>185</b>	<b>0.250</b>	<b>20</b>	<b>Edge Start</b>			<b>0.209</b>
	<b>1 1/2</b>	<b>1.500</b>	<b>80</b>	<b>60</b>	<b>90</b>		<b>90</b>	<b>189</b>	<b>0.250</b>	<b>15</b>	<b>Edge Start</b>			<b>0.225</b>
	<b>2</b>	<b>2.000</b>	<b>80</b>	<b>60</b>	<b>90</b>		<b>90</b>	<b>204</b>	<b>0.300</b>	<b>10</b>	<b>Edge Start</b>			<b>0.270</b>

200A Mild Steel (Air/Air)													
Material Thickness		Pre Flow Pressure (Air)	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)	(mm)	bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)	
	6	5.5	85	6.2	See Note	6.2	163	3.6	4700	7.6	0	2.4	
	8	5.5	85	6.2		6.2	161	3.6	3970	7.6	0.1	2.9	
	10	5.5	85	6.2		6.2	160	3.6	3190	7.6	0.1	3.4	
	12	5.5	85	6.2		6.2	162	3.6	2710	7.6	0.3	3.7	
	15	5.5	85	6.2		6.2	163	3.6	2080	7.6	0.4	4.0	
	20	5.5	85	6.2		6.2	169	4.6	1430	9.5	0.6	4.5	
	25	5.5	85	6.2		6.2	176	5.0	920	12.5	1.4	4.8	
	<b>32</b>	<b>5.5</b>	<b>85</b>	<b>6.2</b>		<b>6.2</b>	<b>185</b>	<b>6.4</b>	<b>500</b>	<b>Edge Start</b>			<b>5.3</b>
	<b>38</b>	<b>5.5</b>	<b>85</b>	<b>6.2</b>		<b>6.2</b>	<b>189</b>	<b>6.4</b>	<b>380</b>	<b>Edge Start</b>			<b>5.7</b>
	<b>44</b>	<b>5.5</b>	<b>85</b>	<b>6.2</b>		<b>6.2</b>	<b>196</b>	<b>6.9</b>	<b>320</b>	<b>Edge Start</b>			<b>6.2</b>
	<b>50</b>	<b>5.5</b>	<b>85</b>	<b>6.2</b>	<b>6.2</b>	<b>203</b>	<b>7.5</b>	<b>260</b>	<b>Edge Start</b>			<b>6.8</b>	

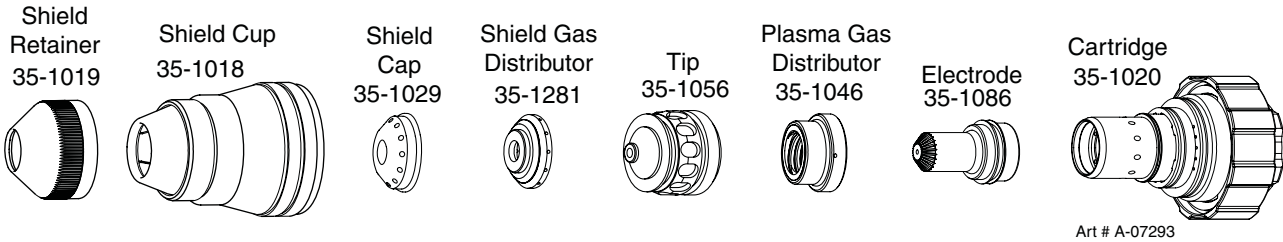
**NOTE:** Set air shield parameters by pressure only.

**Bold italic** type indicates edge starts only.

# Mild Steel

## 200A

### O<sub>2</sub> Plasma / Air Shield



Art # A-07293

200A Mild Steel (O <sub>2</sub> /Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Min/Max
				Plasma (O <sub>2</sub> )		Shield (Air)							
(ga)	(in)	inch	(PSI)	Ball	(PSI)	Ball	(PSI)	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	1/4	0.250	60	90	120	See Note	70	163	0.140	235	0.300	0.4	0.153
	3/8	0.375	60	90	120		70	168	0.140	160	0.300	0.5	0.171
	1/2	0.500	60	90	120		70	164	0.140	125	0.350	0.6	0.173
	5/8	0.625	60	90	120		70	169	0.140	100	0.350	0.7	0.191
	3/4	0.750	60	90	120		70	171	0.140	75	0.450	0.8	0.193
	1	1.000	60	90	120		70	179	0.180	50	0.500	1.4	0.218
	<b>1 1/4</b>	<b>1.250</b>	<b>60</b>	<b>90</b>	<b>120</b>		<b>70</b>	<b>184</b>	<b>0.200</b>	<b>30</b>	<b>0.500</b>	<b>2.6</b>	<b>0.251</b>
	<b>1 1/2</b>	<b>1.500</b>	<b>60</b>	<b>90</b>	<b>120</b>		<b>70</b>	<b>198</b>	<b>0.200</b>	<b>20</b>	<b>0.500</b>	<b>4</b>	<b>0.268</b>
	<b>2</b>	<b>2.000</b>	<b>60</b>	<b>90</b>	<b>120</b>		<b>70</b>	<b>203</b>	<b>0.250</b>	<b>10</b>	<b>Edge Start</b>		<b>0.268</b>

Material Thickness		Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (O <sub>2</sub> )		Shield (Air)							
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
6	6	4.1	90	8.3	See Note	4.8	163	3.6	6000	7.6	0.4	3.9
8	8	4.1	90	8.3		4.8	166	3.6	5000	7.6	0.5	4.1
10	10	4.1	90	8.3		4.8	167	3.6	3900	7.6	0.5	4.4
12	12	4.1	90	8.3		4.8	165	3.6	3200	8.9	0.6	4.4
15	15	4.1	90	8.3		4.8	168	3.6	2550	8.9	0.7	4.7
20	20	4.1	90	8.3		4.8	172	3.6	1800	11.4	0.9	5.0
25	25	4.1	90	8.3		4.8	178	4.6	1300	12.7	1.4	5.5
32	32	<b>4.1</b>	<b>90</b>	<b>8.3</b>		<b>4.8</b>	<b>185</b>	<b>5.1</b>	<b>800</b>	<b>12.7</b>	<b>2.6</b>	<b>6.4</b>
38	38	<b>4.1</b>	<b>90</b>	<b>8.3</b>		<b>4.8</b>	<b>198</b>	<b>5.1</b>	<b>500</b>	<b>12.7</b>	<b>4.0</b>	<b>6.8</b>
44	44	<b>4.1</b>	<b>90</b>	<b>8.3</b>		<b>4.8</b>	<b>201</b>	<b>6.4</b>	<b>380</b>	<b>Edge Start</b>		<b>6.8</b>
50	50	<b>4.1</b>	<b>90</b>	<b>8.3</b>	<b>4.8</b>	<b>204</b>	<b>6.4</b>	<b>250</b>	<b>Edge Start</b>		<b>6.8</b>	

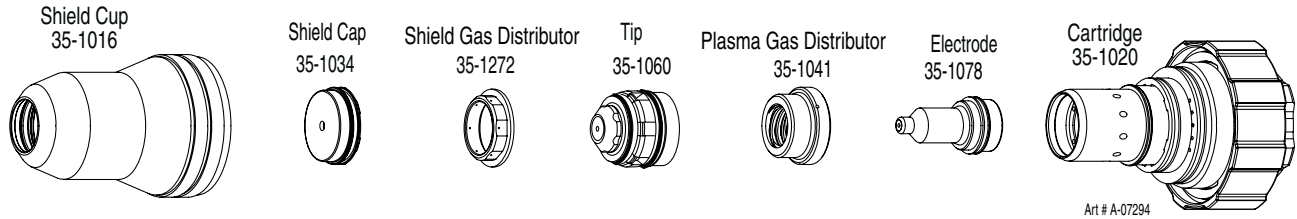
**Bold type** indicates maximum piercing parameters. **Bold italic** indicates edge starts only.

NOTE: Set air shield parameters by pressure only.

# Stainless Steel

## 55A

### Air Plasma / Air Shield



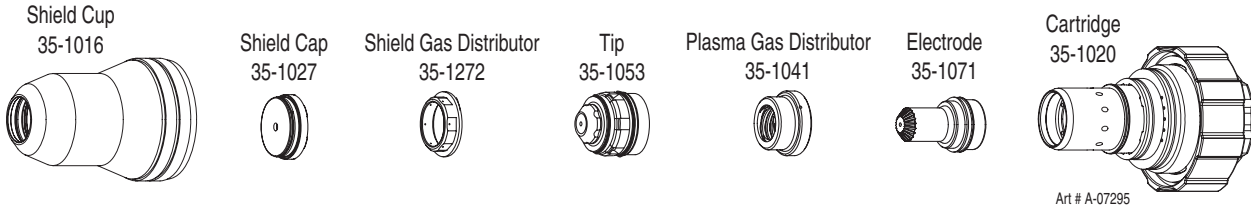
55A Stainless Steel (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
21		0.034	90	45	90	55	90	117	0.125	600	0.200	0.0	0.067
16		0.063	90	45	90	55	90	117	0.150	350	0.200	0.0	0.068
10		0.141	90	45	90	55	90	117	0.150	100	0.200	0.1	0.086
	3/16	0.188	90	45	90	55	90	123	0.150	60	0.200	0.1	0.086
	1/4	0.250	90	45	90	55	90	123	0.150	40	0.200	0.2	0.088

55A Stainless Steel (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	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	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
0.8		6.2	45	6.2	55	6.2	117	3.2	15240	5.1	0.0	1.7
1		6.2	45	6.2	55	6.2	117	3.3	14060	5.1	0.0	1.7
1.5		6.2	45	6.2	55	6.2	117	3.7	9750	5.1	0.0	1.7
2		6.2	45	6.2	55	6.2	117	3.8	7610	5.1	0.0	1.8
3		6.2	45	6.2	55	6.2	117	3.8	4400	5.1	0.1	2.1
4		6.2	45	6.2	55	6.2	119	3.8	2180	5.1	0.1	2.2
5		6.2	45	6.2	55	6.2	123	3.8	1450	5.1	0.1	2.2
6		6.2	45	6.2	55	6.2	123	3.8	1130	5.1	0.2	2.2

# Stainless Steel

## 100A

### Air Plasma / Air Shield



100A Stainless Steel (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	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	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
16		0.063	90	58	90	75	90	145	0.080	500	0.200	0.0	0.099
10		0.141	90	58	90	75	90	150	0.100	225	0.325	0.0	0.102
	3/16	0.188	90	58	90	75	90	153	0.140	175	0.325	0.1	0.105
	1/4	0.250	90	58	90	75	90	157	0.140	100	0.325	0.1	0.105
	3/8	0.375	90	58	90	75	90	158	0.140	65	0.325	0.2	0.110
	1/2	0.500	90	58	90	75	90	165	0.160	45	0.325	0.4	0.112
	<b>5/8</b>	<b>0.625</b>	<b>90</b>	<b>58</b>	<b>90</b>	<b>75</b>	<b>90</b>	<b>168</b>	<b>0.160</b>	<b>35</b>	<b>0.350</b>	<b>1.0</b>	<b>0.114</b>

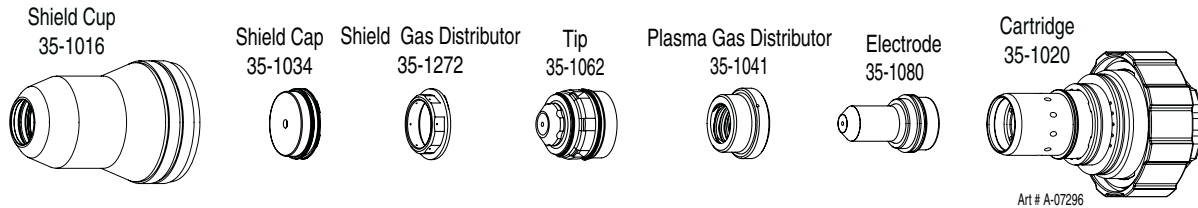
100A Stainless Steel (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (Air)		Shield (Air)							
(mm)		bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
1.5		6.2	58	6.2	75	6.2	145	2.0	12700	5.1	0.0	2.4
2		6.2	58	6.2	75	6.2	146	2.1	11290	5.7	0.0	2.5
3		6.2	58	6.2	75	6.2	149	2.0	6330	8.3	0.0	2.6
4		6.2	58	6.2	75	6.2	151	3.6	5270	8.3	0.1	2.7
5		6.2	58	6.2	75	6.2	154	3.6	4170	8.3	0.1	2.7
6		6.2	58	6.2	75	6.2	156	3.6	3020	8.3	0.1	2.7
8		6.2	58	6.2	75	6.2	158	3.6	2080	8.3	0.2	2.7
10		6.2	58	6.2	75	6.2	159	3.6	1580	8.3	0.2	2.8
12		6.2	58	6.2	75	6.2	163	4.0	1260	8.3	0.4	2.8
	<b>15</b>	<b>6.2</b>	<b>58</b>	<b>6.2</b>	<b>75</b>	<b>6.2</b>	<b>167</b>	<b>4.1</b>	<b>960</b>	<b>8.7</b>	<b>0.8</b>	<b>2.9</b>

**Bold type** indicates maximum piercing parameters.

# Stainless Steel

## 100A

### H35 Plasma / N<sub>2</sub> Shield



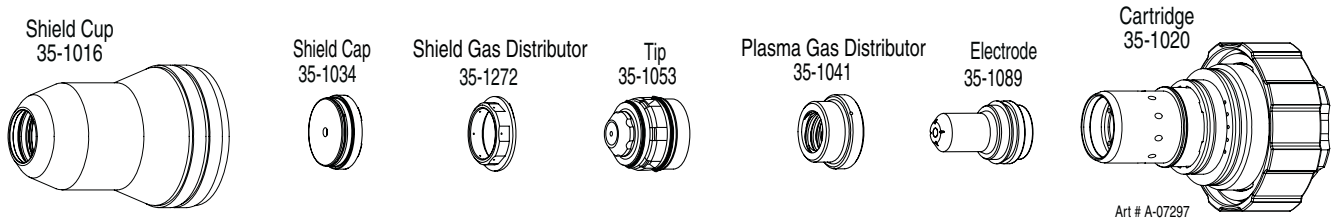
100A Stainless Steel (H35/N <sub>2</sub> )													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N <sub>2</sub> )							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	3/8	0.375	80	65	120	59	120	148	0.130	50	0.250	0.3	0.090
	1/2	0.500	80	65	120	81	120	158	0.130	37	0.250	0.5	0.100
	5/8	0.625	80	65	120	43	120	172	0.140	26	0.250	0.6	0.115

100A Stainless Steel (H35/N <sub>2</sub> )													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N <sub>2</sub> )							
(mm)			bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
10			5.5	65	8.3	59	8.2	149	3.3	1220	6.4	0.3	2.3
12			5.5	65	8.3	81	8.2	156	3.3	1010	6.4	0.5	2.5
15			5.5	65	8.3	43	8.2	168	3.5	740	6.4	0.6	2.8

# Stainless Steel

## 100A

### N<sub>2</sub> Plasma / H<sub>2</sub>O Shield



100A Stainless Steel (N <sub>2</sub> /H <sub>2</sub> O)													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)							
(ga)	(in)	inch	psi	Ball*	psi	Ball*	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
10		0.141	80	60	120	5	55	156	0.125	160	0.200	0.000	0.074
	3/16	0.188	80	60	120	5	55	158	0.125	100	0.250	0.300	0.080
	1/4	0.250	80	60	120	5	55	165	0.125	60	0.250	0.300	0.086
	3/8	0.375	80	60	120	5	55	173	0.125	50	0.250	0.300	0.087
	1/2	0.500	80	60	120	5	55	179	0.130	35	0.300	0.500	0.100
	<b>5/8</b>	<b>0.625</b>	<b>80</b>	<b>60</b>	<b>120</b>	<b>5</b>	<b>55</b>	<b>181</b>	<b>0.140</b>	<b>30</b>	<b>0.300</b>	<b>0.600</b>	<b>0.110</b>
	<b>3/4</b>	<b>0.750</b>	<b>80</b>	<b>60</b>	<b>120</b>	<b>5</b>	<b>55</b>	<b>185</b>	<b>0.150</b>	<b>25</b>	<b>Edge Start</b>		<b>0.120</b>

Material Thickness		Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)							
(mm)		bar	Ball*	bar	Ball*	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
3		5.5	60	8.3	5	3.8	155	3.2	4810	4.5	0	1.8
4		5.5	60	8.3	5	3.8	157	3.2	3530	5.5	0.1	1.9
5		5.5	60	8.3	5	3.8	159	3.2	2400	6.4	0.3	2.1
6		5.5	60	8.3	5	3.8	163	3.2	1750	6.4	0.3	2.2
8		5.5	60	8.3	5	3.8	169	3.2	1390	6.4	0.3	2.2
10		5.5	60	8.3	5	3.8	174	3.2	1210	6.5	0.3	2.3
12		5.5	60	8.3	5	3.8	178	3.3	970	7.3	0.5	2.5
	<b>15</b>	<b>5.5</b>	<b>60</b>	<b>8.3</b>	<b>5</b>	<b>3.8</b>	<b>180</b>	<b>3.5</b>	<b>800</b>	<b>7.6</b>	<b>0.6</b>	<b>2.7</b>
	<b>20</b>	<b>5.5</b>	<b>60</b>	<b>8.3</b>	<b>5</b>	<b>3.8</b>	<b>186</b>	<b>3.9</b>	<b>600</b>	<b>Edge Start</b>		<b>3.0</b>

\* Ball setting for shield water is set using customer line pressure of 55 psi / 3.8 bar

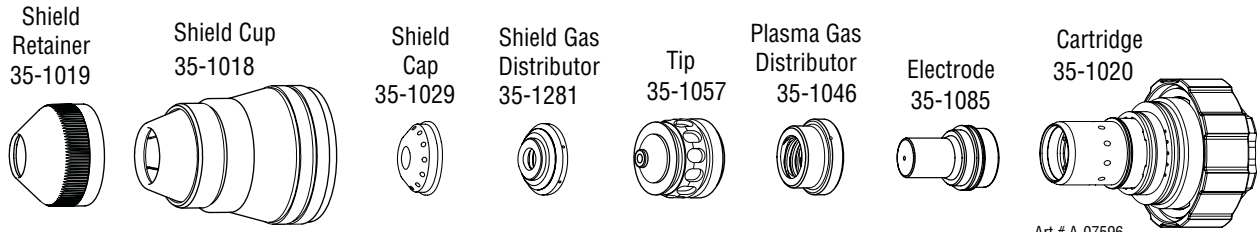
**Bold type** indicates maximum piercing parameters. **Bold italic** indicates edge starts only.

**NOTE:** Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing system.

# Stainless Steel

## 200A

### Air Plasma / Air Shield



Art # A-07596

200A Stainless Steel (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Min/Max
				Plasma (Air)		Shield (Air)							
(ga)	(in)	inch	(PSI)	Ball	(PSI)	Ball	(PSI)	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	3/16	0.1875	56	90	110	See Note	70	170	0.140	300	0.300	0	0.163
	1/4	0.250	56	90	110		70	173	0.140	275	0.300	0.1	0.162
	3/8	0.375	56	90	110		70	173	0.140	200	0.300	0.2	0.169
	1/2	0.500	56	90	110		70	175	0.140	145	0.350	0.3	0.169
	5/8	0.625	56	90	110		70	177	0.140	110	0.400	0.4	0.174
	3/4	0.750	56	90	110		70	179	0.160	80	0.450	0.5	0.176
	7/8	0.875	56	90	110		70	181	0.170	60	0.450	0.6	0.181
	1	1.000	56	90	110		70	184	0.180	45	0.500	1.1	0.181
	<b>1 1/4</b>	<b>1.250</b>	<b>56</b>	<b>90</b>	<b>110</b>		<b>70</b>	<b>196</b>	<b>0.200</b>	<b>25</b>	<b>0.500</b>	<b>2.0</b>	<b>0.207</b>
	<b>1 1/2</b>	<b>1.500</b>	<b>56</b>	<b>90</b>	<b>110</b>		<b>70</b>	<b>204</b>	<b>0.200</b>	<b>15</b>	<b>Edge Start</b>		<b>0.220</b>
	<b>2</b>	<b>2.000</b>	<b>56</b>	<b>90</b>	<b>110</b>		<b>70</b>	<b>205</b>	<b>0.200</b>	<b>10</b>	<b>Edge Start</b>		<b>0.230</b>

200A Stainless Steel (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	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)	Ball	(Bar)	Ball	(Bar)	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
5		3.9	90	7.6	See Note	4.8	170	3.6	7530	7.6	0	4.1
6		3.9	90	7.6		4.8	173	3.6	7130	7.6	0.1	4.1
8		3.9	90	7.6		4.8	173	3.6	6000	7.6	0.2	4.2
10		3.9	90	7.6		4.8	175	3.6	4870	4.8	0.2	4.3
12		3.9	90	7.6		4.8	177	3.6	3990	8.6	0.3	4.3
15		3.9	90	7.6		4.8	179	3.6	3040	9.8	0.4	4.4
20		3.9	90	7.6		4.8	181	4.4	1880	11.4	0.5	4.5
25		3.9	90	7.6		4.8	184	4.5	1190	12.5	1	4.6
<b>32</b>		<b>3.9</b>	<b>90</b>	<b>7.6</b>		<b>4.8</b>	<b>196</b>	<b>5.1</b>	<b>630</b>	<b>12.7</b>	<b>1.9</b>	<b>5.3</b>
<b>38</b>		<b>3.9</b>	<b>90</b>	<b>7.6</b>		<b>4.8</b>	<b>204</b>	<b>5.1</b>	<b>390</b>	<b>Edge Start</b>		<b>5.6</b>
<b>50</b>		<b>3.9</b>	<b>90</b>	<b>7.6</b>		<b>4.8</b>	<b>205</b>	<b>5.1</b>	<b>250</b>	<b>Edge Start</b>		<b>5.8</b>

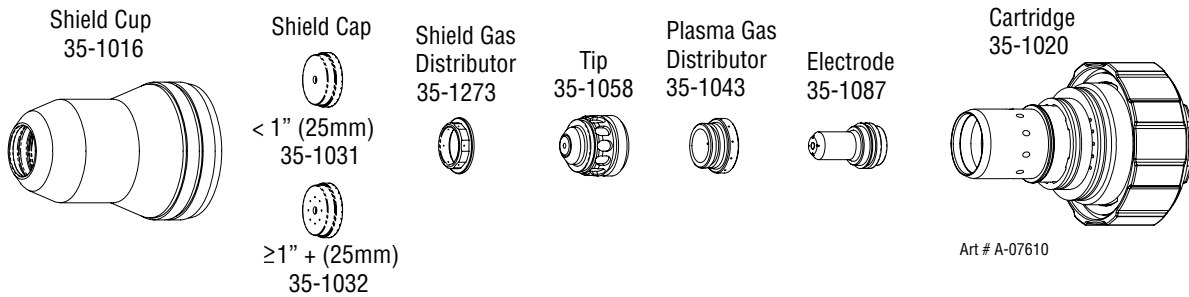
**Bold type** indicates maximum piercing parameters. **Bold italic** indicates edge starts only.

Note: Set air shield parameters by pressure only.

# Stainless Steel

## 200A

### H35 Plasma / N<sub>2</sub> Shield \*\*



200A Stainless Steel (H35/N <sub>2</sub> )													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height*	Pierce Delay	Kerf Width @ Min/Max
				Plasma (H35)		Shield (N <sub>2</sub> )							
(ga)	(in)	inch	(PSI)	Ball	(PSI)	Ball	(PSI)	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	3/8	0.375	20	100	70	See Note	100	146	0.240	90	0.300	0.5	0.160
	1/2	0.500	20	100	70		100	150	0.260	65	0.300	0.6	0.162
	5/8	0.625	20	100	70		100	153	0.280	50	0.350	0.7	0.168
	3/4	0.750	20	100	70		100	156	0.300	40	0.400	0.8	0.184
	7/8	0.875	20	100	100		120	163	0.300	35	0.450	1	0.192
	1	1.000	20	100	100		120	167	0.325	30	0.500	2	0.185
	<b>1 1/4</b>	<b>1.250</b>	<b>20</b>	<b>100</b>	<b>100</b>		<b>120</b>	<b>180</b>	<b>0.325</b>	<b>20</b>	<b>Edge Start</b>		<b>0.175</b>
	<b>1 1/2</b>	<b>1.500</b>	<b>20</b>	<b>100</b>	<b>100</b>		<b>120</b>	<b>182</b>	<b>0.350</b>	<b>16</b>	<b>Edge Start</b>		<b>0.180</b>
	<b>2</b>	<b>2.000</b>	<b>20</b>	<b>100</b>	<b>100</b>		<b>120</b>	<b>185</b>	<b>0.350</b>	<b>12</b>	<b>Edge Start</b>		<b>0.195</b>

Material Thickness		Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height*	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N <sub>2</sub> )							
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
10	12	1.4	100	4.8	See Note	6.9	147	6.2	2190	7.6	0.5	4.1
12	15	1.4	100	4.8		6.9	149	6.5	1790	7.6	0.6	4.1
15	20	1.4	100	4.8		6.9	152	7.0	1380	8.5	0.7	4.2
20	25	1.4	100	4.8		6.9	158	7.8	980	10.5	0.9	4.7
25	32	1.4	100	6.9		8.3	166	8.3	780	12.5	1.9	4.7
32	38	<b>1.4</b>	<b>100</b>	<b>6.9</b>		<b>8.3</b>	<b>180</b>	<b>8.3</b>	<b>500</b>	<b>Edge Start</b>		<b>4.5</b>
38	50	<b>1.4</b>	<b>100</b>	<b>6.9</b>		<b>8.3</b>	<b>182</b>	<b>8.9</b>	<b>410</b>	<b>Edge Start</b>		<b>4.6</b>
50		<b>1.4</b>	<b>100</b>	<b>6.9</b>		<b>8.3</b>	<b>185</b>	<b>8.9</b>	<b>310</b>	<b>Edge Start</b>		<b>4.9</b>

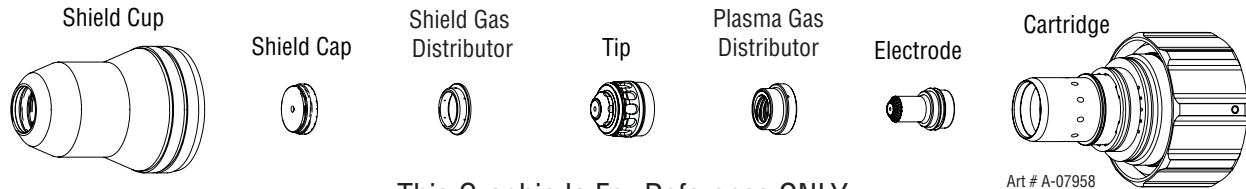
\* Lock pierce height for first 0.5" to 1" of cutting to avoid torch hitting the pierce metal puddle.

\*\*Requires Firmware version 3.2 or higher for the Power Supply and 2.1 or higher for the Gas Control Box.

Note: Set air shield parameters by pressure only

# Stainless Steel 200A

## N<sub>2</sub> Plasma / H<sub>2</sub>O Shield



This Graphic Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
35-1016	35-1039	35-1273	35-1064	35-1048	35-1089	35-1020

Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)*							
(ga)	(in)	inch	(PSI)	(Ball)	(PSI)	(Ball)	(PSI)	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	3/8	0.375	20	80	90	5	55	155	0.160	95	0.300	0.0	0.110
	1/2	0.500	20	80	90	5	55	156	0.160	85	0.300	0.4	0.115
	5/8	0.625	20	80	90	5	55	158	0.180	65	0.300	0.5	0.122
	3/4	0.750	20	80	90	5	55	163	0.200	50	0.300	0.7	0.133
	7/8	0.875	20	80	90	5	55	177	0.250	40	0.400	0.9	0.149
	<b>1</b>	<b>1.000</b>	<b>20</b>	<b>80</b>	<b>90</b>	<b>5</b>	<b>55</b>	<b>183</b>	<b>0.300</b>	<b>35</b>	<b>0.450</b>	<b>1.0</b>	<b>0.148</b>
	<b>1 1/4</b>	<b>1.250</b>	<b>20</b>	<b>80</b>	<b>90</b>	<b>5</b>	<b>55</b>	<b>185</b>	<b>0.300</b>	<b>20</b>	<b>Edge Start</b>		<b>0.176</b>
	<b>1 1/2</b>	<b>1.500</b>	<b>20</b>	<b>80</b>	<b>90</b>	<b>5</b>	<b>55</b>	<b>200</b>	<b>0.350</b>	<b>10</b>	<b>Edge Start</b>		<b>0.211</b>
	<b>1 3/4</b>	<b>1.750</b>	<b>20</b>	<b>80</b>	<b>90</b>	<b>5</b>	<b>55</b>	<b>207</b>	<b>0.350</b>	<b>8</b>	<b>Edge Start</b>		<b>0.216</b>

Material Thickness		Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)*							
(mm)		(Bar)	(Ball)	(Bar)	(Ball)	(Bar)	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
10		1.4	80	6.3	5	3.8	155	4.1	2400	7.6	0.0	2.8
12		1.4	80	6.3	5	3.8	156	4.1	2000	7.6	0.4	2.9
15		1.4	80	6.3	5	3.8	157	4.4	1550	7.6	0.5	3.1
20		1.4	80	6.3	5	3.8	165	5.1	1100	7.6	0.7	3.4
<b>25</b>		<b>1.4</b>	<b>80</b>	<b>6.3</b>	<b>5</b>	<b>3.8</b>	<b>183</b>	<b>7.6</b>	<b>900</b>	<b>11.4</b>	<b>0.9</b>	<b>3.7</b>
<b>32</b>		<b>1.4</b>	<b>80</b>	<b>6.3</b>	<b>5</b>	<b>3.8</b>	<b>185</b>	<b>7.6</b>	<b>500</b>	<b>Edge Start</b>		<b>4.5</b>
<b>38</b>		<b>1.4</b>	<b>80</b>	<b>6.3</b>	<b>5</b>	<b>3.8</b>	<b>200</b>	<b>8.9</b>	<b>250</b>	<b>Edge Start</b>		<b>5.4</b>
<b>44</b>		<b>1.4</b>	<b>80</b>	<b>6.3</b>	<b>5</b>	<b>3.8</b>	<b>206</b>	<b>8.9</b>	<b>200</b>	<b>Edge Start</b>		<b>5.5</b>

**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 by customer pressure regulator.

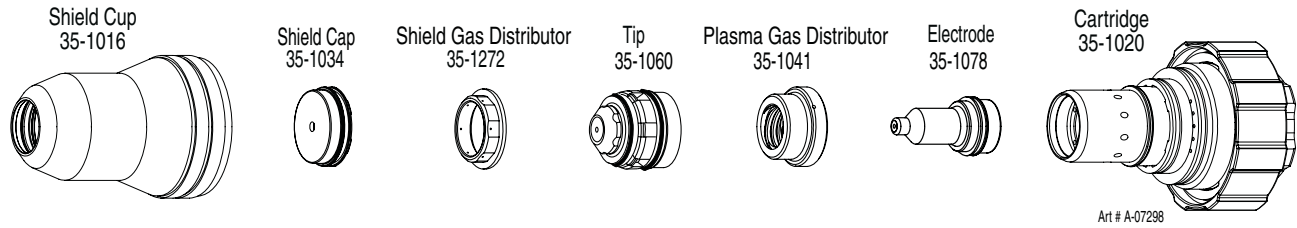
**Note1:** Ohmic height sensing is not recommended with water shield. Water on the plate interferes electrically with the ohmic sensing circuit.

**Note2:** Water source used for shield must be demineralized.

# Aluminum

## 55A

### Air Plasma / Air Shield



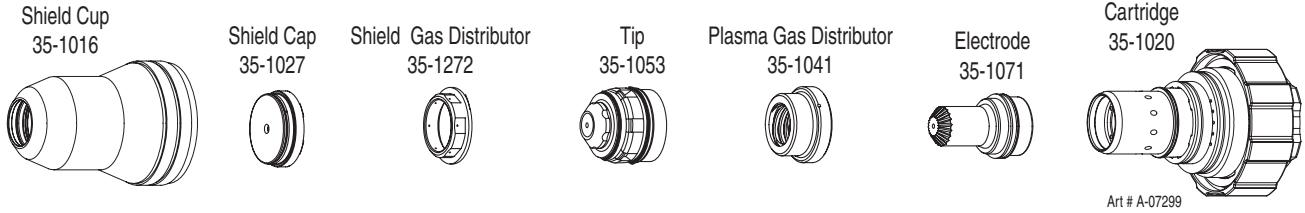
55A Aluminum (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (Air)		Shield (Air)							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
23		0.031	90	45	90	55	90	120	0.100	600	0.150	0.0	0.066
16		0.064	90	45	90	55	90	120	0.100	400	0.200	0.0	0.070
11		0.125	90	45	90	55	90	125	0.150	140	0.200	0.0	0.084
	3/16	0.188	90	45	90	55	90	125	0.150	100	0.200	0.0	0.084
	1/4	0.250	90	45	90	55	90	125	0.150	50	0.200	0.1	0.089

55A Aluminum (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	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	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
1		6.2	45	6.2	55	6.2	120	2.5	13950	4.1	0.0	1.7
2		6.2	45	6.2	55	6.2	121	2.8	8790	5.1	0.0	1.9
3		6.2	45	6.2	55	6.2	124	3.5	5130	5.1	0.0	2.0
4		6.2	45	6.2	55	6.2	125	3.8	3130	5.1	0.0	2.1
5		6.2	45	6.2	55	6.2	125	3.8	2360	5.1	0.0	2.2
6		6.2	45	6.2	55	6.2	125	3.8	1550	5.1	0.1	2.2

# Aluminum

## 100A

### Air Plasma / Air Shield



100A Aluminum (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	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	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
16		.064	80	58	90	75	90	159	0.130	500	0.275	0.0	0.103
10		0.135	80	58	90	75	90	159	0.130	260	0.275	0.0	0.106
	3/16	0.188	80	58	90	75	90	166	0.130	120	0.325	0.1	0.100
	1/4	0.250	80	58	90	75	90	168	0.140	100	0.325	0.2	0.104
	3/8	0.375	80	58	90	45	90	168	0.140	75	0.325	0.2	0.107
	1/2	0.500	80	58	90	45	90	170	0.140	45	0.325	0.3	0.109
	5/8	0.625	80	58	90	45	90	176	0.140	35	0.325	0.4	0.112
	<b>3/4</b>	<b>0.750</b>	<b>80</b>	<b>58</b>	<b>90</b>	<b>45</b>	<b>90</b>	<b>180</b>	<b>0.180</b>	<b>35</b>	<b>0.350</b>	<b>0.9</b>	<b>0.121</b>

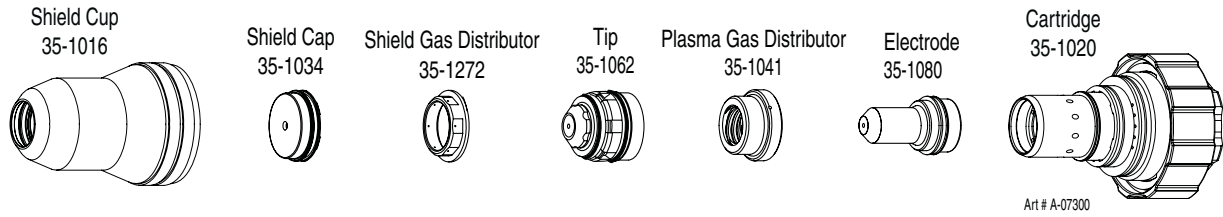
Material Thickness		Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (Air)		Shield (Air)							
(mm)	bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)	
2	5.5	58	6.2	75	6.2	159	3.3	11430	7.0	0.0	2.6	
3	5.5	58	6.2	75	6.2	159	3.3	8050	7.0	0.0	2.7	
4	5.5	58	6.2	75	6.2	162	3.3	5100	7.5	0.0	2.6	
5	5.5	58	6.2	75	6.2	166	3.3	2980	8.3	0.1	2.6	
6	5.5	58	6.2	75	6.2	168	3.5	2650	8.3	0.2	2.6	
8	5.5	58	6.2	45	6.2	168	3.6	2210	8.3	0.2	2.7	
10	5.5	58	6.2	45	6.2	168	3.6	1790	8.3	0.2	2.7	
12	5.5	58	6.2	45	6.2	170	3.6	1310	8.3	0.3	2.8	
15	5.5	58	6.2	45	6.2	174	3.6	960	8.3	0.4	2.8	
<b>20</b>	<b>5.5</b>	<b>58</b>	<b>6.2</b>	<b>45</b>	<b>6.2</b>	<b>181</b>	<b>4.9</b>	<b>890</b>	<b>9.1</b>	<b>1.0</b>	<b>3.1</b>	

**Bold type** indicates maximum piercing parameters.

# Aluminum

## 100A

### H35 Plasma / N<sub>2</sub> Shield



100A Aluminum (H35/N <sub>2</sub> )													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (H35)		Shield (N <sub>2</sub> )							
(ga)	(in)	inch	psi	Ball	psi	Ball	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	3/8	0.375	80	68	120	51	120	153	0.188	60	0.350	0.1	0.100
	1/2	0.500	80	68	120	51	120	158	0.188	40	0.350	0.4	0.110
	5/8	0.625	80	68	120	51	120	160	0.188	30	0.350	0.5	0.113
	<b>3/4</b>	<b>0.750</b>	<b>80</b>	<b>68</b>	<b>120</b>	<b>51</b>	<b>120</b>	<b>174</b>	<b>0.250</b>	<b>20</b>	<b>0.350</b>	<b>0.6</b>	<b>0.130</b>

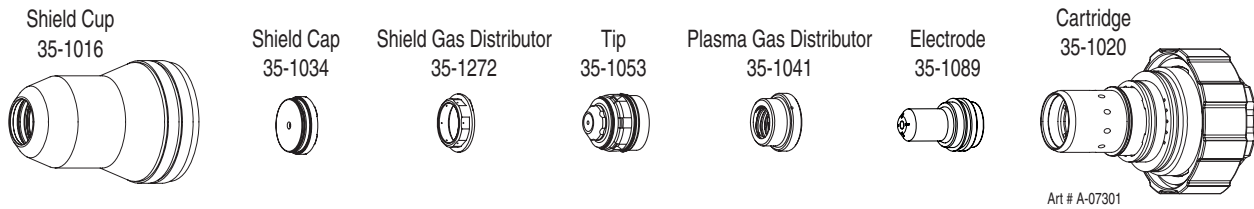
Material Thickness		Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N <sub>2</sub> )							
(mm)		bar	Ball	bar	Ball	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
10		5.5	68	8.3	51	8.3	154	4.8	1450	8.9	0.1	2.6
12		5.5	68	8.3	51	8.3	157	4.8	1130	8.9	0.3	2.7
15		5.5	68	8.3	51	8.3	159	4.8	830	8.9	0.5	2.8
<b>20</b>		<b>5.5</b>	<b>68</b>	<b>8.3</b>	<b>51</b>	<b>8.3</b>	<b>178</b>	<b>6.8</b>	<b>430</b>	<b>8.9</b>	<b>0.6</b>	<b>3.4</b>

**Bold type** indicates maximum piercing parameters.

# Aluminum

## 100A

### N<sub>2</sub> Plasma / H<sub>2</sub>O Shield



100A Aluminum (N <sub>2</sub> /H <sub>2</sub> O)													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
				Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)							
(ga)	(in)	inch	psi	Ball*	psi	Ball*	psi	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
10		0.135	80	60	120	5	55	153	0.125	170	0.200	0.0	0.072
	3/16	0.188	80	60	120	5	55	158	0.125	80	0.250	0.3	0.080
	1/4	0.250	80	60	120	5	55	158	0.125	60	0.250	0.3	0.085
	3/8	0.375	80	60	120	5	55	168	0.125	50	0.250	0.3	0.086
	1/2	0.500	80	60	120	5	55	175	0.130	35	0.300	0.6	0.091
	<b>5/8</b>	<b>0.625</b>	<b>80</b>	<b>60</b>	<b>120</b>	<b>5</b>	<b>55</b>	<b>177</b>	<b>0.140</b>	<b>20</b>	<b>0.300</b>	<b>0.8</b>	<b>0.120</b>

Material Thickness		Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)							
(mm)		bar	Ball*	bar	Ball*	bar	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
4		5.5	60	8.3	5	3.8	155	3.2	3350	5.6	0.1	1.9
5		5.5	60	8.3	5	3.8	158	3.2	1960	6.4	0.3	2.1
6		5.5	60	8.3	5	3.8	158	3.2	1640	6.4	0.3	2.1
8		5.5	60	8.3	5	3.8	163	3.2	1390	6.4	0.3	2.2
10		5.5	60	8.3	5	3.8	169	3.2	1210	6.5	0.3	2.2
12		5.5	60	8.3	5	3.8	173	3.3	970	7.3	0.5	2.3
<b>15</b>		<b>5.5</b>	<b>60</b>	<b>8.3</b>	<b>5</b>	<b>3.8</b>	<b>176</b>	<b>3.5</b>	<b>610</b>	<b>7.6</b>	<b>0.7</b>	<b>2.8</b>

\* Ball setting for shield water is set using customer line pressure of 55 psi / 3.8 bar

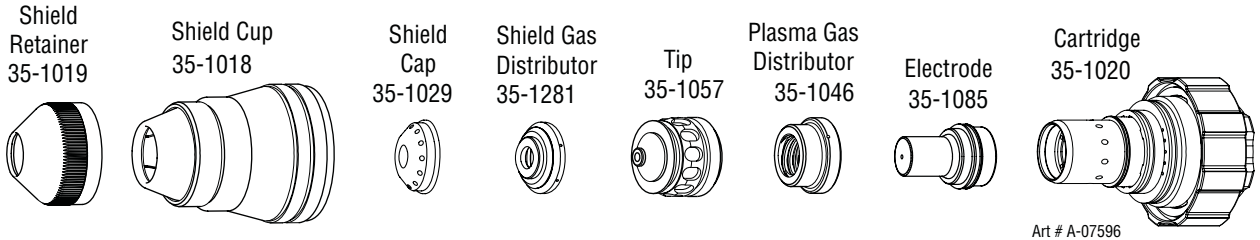
**Bold type** indicates maximum piercing parameters.

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

# Aluminum

## 200A

### Air Plasma / Air Shield



200A Aluminum (Air/Air)													
Material Thickness			Pre Flow Pressure (Air)	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height	Pierce Delay	Kerf Width @ Min/Max
				Plasma (Air)		Shield (Air)							
(ga)	(in)	inch	(PSI)	Ball	(PSI)	Ball	(PSI)	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	3/16	0.1875	56	90	110	See Note	70	177	0.130	225	0.3	0	0.176
	1/4	0.250	56	90	110		70	180	0.130	200	0.300	0.1	0.178
	3/8	0.375	56	90	110		70	182	0.130	160	0.300	0.2	0.177
	1/2	0.500	56	90	110		70	185	0.140	120	0.350	0.3	0.173
	5/8	0.625	56	90	110		70	188	0.140	90	0.400	0.4	0.180
	3/4	0.750	56	90	110		70	193	0.160	70	0.450	0.5	0.187
	7/8	0.875	56	90	110		70	196	0.170	55	0.450	0.6	0.184
	1	1.000	56	90	110		70	203	0.180	40	0.500	0.7	0.206
	<b>1 1/4</b>	<b>1.250</b>	<b>56</b>	<b>90</b>	<b>110</b>		<b>70</b>	<b>211</b>	<b>0.200</b>	<b>25</b>	<b>0.500</b>	<b>1.3</b>	<b>0.219</b>
	<b>1 1/2</b>	<b>1.500</b>	<b>56</b>	<b>90</b>	<b>110</b>		<b>70</b>	<b>220</b>	<b>0.200</b>	<b>15</b>	<b>Edge Start</b>		<b>0.230</b>
	<b>2</b>	<b>2.000</b>	<b>56</b>	<b>90</b>	<b>110</b>		<b>70</b>	<b>238</b>	<b>2.000</b>	<b>8</b>	<b>Edge Start</b>		<b>0.242</b>

200A Aluminum (Air/Air)												
Material Thickness		Pre Flow Pressure (Air)	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)	Ball	(Bar)	Ball	(Bar)	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
5		3.9	90	7.6	See Note	4.8	177	3.3	5220	7.6	0	4.5
6		3.9	90	7.6		4.8	179	3.3	4550	4.6	0.1	4.5
8		3.9	90	7.6		4.8	181	3.3	3910	7.6	0.2	4.5
10		3.9	90	7.6		4.8	182	3.3	3270	7.8	0.2	4.5
12		3.9	90	7.6		4.8	184	3.5	2500	8.6	0.3	4.4
15		3.9	90	7.6		4.8	187	3.6	1660	9.8	0.4	4.5
20		3.9	90	7.6		4.8	194	4.4	1060	11.4	0.5	4.7
25		3.9	90	7.6		4.8	202	4.5	630	12.5	0.7	5.2
<b>32</b>		<b>3.9</b>	<b>90</b>	<b>7.6</b>		<b>4.8</b>	<b>211</b>	<b>5.1</b>	<b>390</b>	<b>12.7</b>	<b>1.2</b>	<b>5.6</b>
<b>38</b>		<b>3.9</b>	<b>90</b>	<b>7.6</b>		<b>4.8</b>	<b>220</b>	<b>5.1</b>	<b>300</b>	<b>Edge Start</b>		<b>5.8</b>
<b>50</b>		<b>3.9</b>	<b>90</b>	<b>7.6</b>		<b>4.8</b>	<b>238</b>	<b>5.1</b>	<b>210</b>	<b>Edge Start</b>		<b>6.1</b>

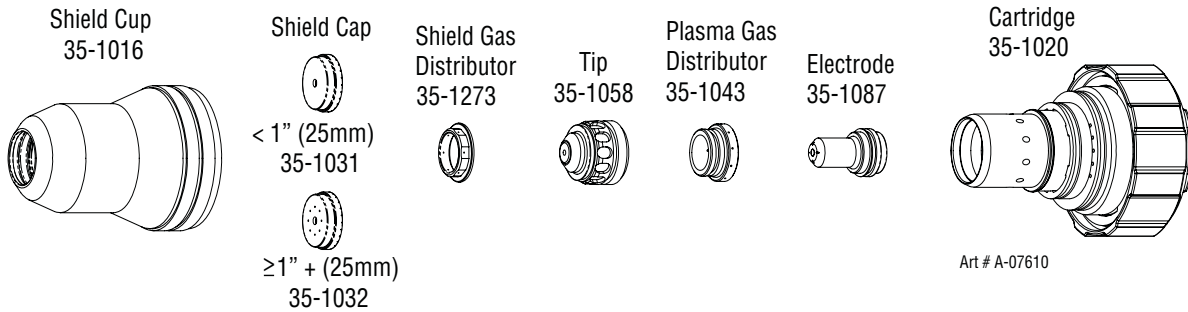
**Bold** type indicates maximum piercing parameters. **Bold italic** indicates edge starts only.

Note: Set air shield parameters by pressure only.

# Aluminum

## 200A

### H35 Plasma / N<sub>2</sub> Shield \*\*



200A Aluminum (H35/N <sub>2</sub> )													
Material Thickness			Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height*	Pierce Delay	Kerf Width @ Min/Max
				Plasma (H35)		Shield (N <sub>2</sub> )							
(ga)	(in)	inch	(PSI)	Ball	(PSI)	Ball	(PSI)	Volts	(in) ±0.005	(ipm)	(in)	(sec)	(in)
	1/2	0.500	20	100	100	See Note	40	148	0.300	150	0.350	0.2	0.179
	5/8	0.625	20	100	100		40	153	0.300	110	0.350	0.3	0.166
	3/4	0.750	20	100	100		40	160	0.300	70	0.400	0.4	0.178
	7/8	0.875	20	100	100		40	164	0.350	55	0.450	0.5	0.215
	1	1.000	20	100	100		100	173	0.350	40	0.500	0.7	0.187
	1 1/4	1.250	20	100	100		100	176	0.350	32	Edge Start		0.170
	1 1/2	1.500	20	100	100		100	183	0.375	25	Edge Start		0.175
	2	2.000	20	100	100		100	186	0.375	15	Edge Start		0.215

200A Aluminum (H35/N <sub>2</sub> )												
Material Thickness		Pre Flow Pressure (N <sub>2</sub> )	Cut Flow Rates / Pressures				Arc Voltage	Torch Working Height	Travel Speed	Initial Piercing Height*	Pierce Delay	Kerf Width @ Rec. Speed
			Plasma (H35)		Shield (N <sub>2</sub> )							
(mm)	(mm)	(Bar)	Ball	(Bar)	Ball	(Bar)	Volts	(mm) ±0.1	(mm/min)	(mm)	(sec)	(mm)
12	15	1.8	100	6.9	See Note	2.8	148	7.6	3810	8.9	0.2	4.5
15	20	1.8	100	6.9		2.8	152	7.6	3070	8.9	0.3	4.3
20	25	1.8	100	6.9		2.8	161	8.0	1750	10.5	0.4	4.8
25	32	1.8	100	6.9		2.8	172	8.9	1060	12.5	0.7	4.8
32	38	1.8	100	6.9		6.9	176	8.9	500	Edge Start		4.3
38	50	1.8	100	6.9		6.9	183	9.5	330	Edge Start		4.4
50		1.8	100	6.9		6.9	186	9.5	210	Edge Start		5.4

\* Lock pierce height for first 0.5" to 1" of cutting to avoid torch hitting the pierce metal puddle.

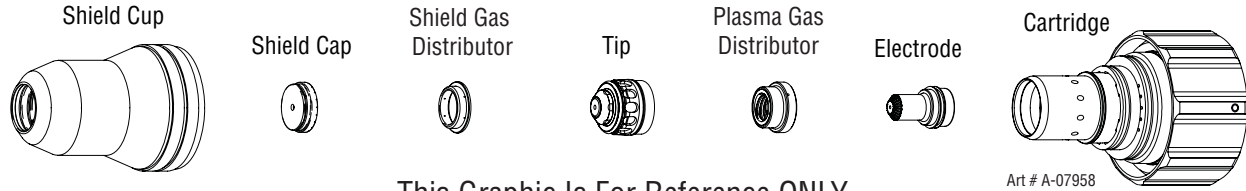
Slightly decreasing the shield gas pressure minimizes dross on aluminum cutting

\*\*Requires Firmware version 3.2 or higher for the Power Supply and 2.1 or higher for the Gas Control Box.

Note: Set air shield parameters by pressure only.

# Aluminum 200A

## N<sub>2</sub> Plasma / H<sub>2</sub>O Shield



This Graphic Is For Reference ONLY

Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
35-1016	35-1039	35-1273	35-1064	35-1048	35-1089	35-1020

Material Thickness			Pre Flow Pressure (N <sub>2</sub> ) (PSI)	Cut Flow Rates / Pressures				Arc Voltage (Volts)	Torch Working Height (in) ±0.005	Travel Speed (ipm)	Initial Piercing Height (in)	Pierce Delay (sec)	Kerf Width @ Rec. Speed (in)
				Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)*							
(ga)	(in)	inch	(Ball)	(PSI)	(Ball)	(PSI)							
	1/2	0.500	20	100	90	5	55	168	0.250	110	0.300	0.3	0.120
	5/8	0.625	20	80	100	5	55	170	0.300	105	0.350	0.5	0.126
	3/4	0.750	20	80	100	5	55	175	0.300	90	0.350	0.6	0.127
	7/8	0.875	20	80	100	5	55	180	0.300	75	0.350	0.8	0.133
	1	1.000	20	80	100	5	55	194	0.350	50	0.400	1.0	0.144
	1.25	1.250	20	80	100	5	55	208	0.400	25	0.450	2.0	0.180
	<b>1 1/2</b>	<b>1.500</b>	<b>20</b>	<b>80</b>	<b>100</b>	<b>5</b>	<b>55</b>	<b>210</b>	<b>0.400</b>	<b>20</b>	<b>0.500</b>	<b>3.0</b>	<b>0.197</b>
	<b>1 3/4</b>	<b>1.750</b>	<b>20</b>	<b>80</b>	<b>100</b>	<b>5</b>	<b>55</b>	<b>212</b>	<b>0.400</b>	<b>18</b>	<b>Edge Start</b>		<b>0.201</b>
	<b>2</b>	<b>2.000</b>	<b>20</b>	<b>80</b>	<b>100</b>	<b>5</b>	<b>55</b>	<b>215</b>	<b>0.400</b>	<b>12</b>	<b>Edge Start</b>		<b>0.204</b>

Material Thickness			Pre Flow Pressure (N <sub>2</sub> ) (Bar)	Cut Flow Rates / Pressures				Arc Voltage (Volts)	Torch Working Height (mm) ±0.1	Travel Speed (mm/min)	Initial Piercing Height (mm)	Pierce Delay (sec)	Kerf Width @ Rec. Speed (mm)
				Plasma (N <sub>2</sub> )		Shield (H <sub>2</sub> O)*							
(mm)			(Ball)	(Bar)	(Ball)	(Bar)							
12			100	6.3	5	3.8	167	6.3	2900	7.6	0.3	3.0	
15			80	6.9	5	3.8	170	7.5	2700	8.9	0.5	3.2	
20			80	6.9	5	3.8	176	7.5	2200	8.9	0.6	3.3	
25			80	6.9	5	3.8	194	8.9	1300	10.2	1.0	3.6	
32			80	6.9	5	3.8	208	10.2	630	11.4	2.0	4.6	
<b>38</b>			<b>80</b>	<b>6.9</b>	<b>5</b>	<b>3.8</b>	<b>210</b>	<b>10.2</b>	<b>500</b>	<b>12.7</b>	<b>3.0</b>	<b>5.0</b>	
<b>44</b>			<b>80</b>	<b>6.9</b>	<b>5</b>	<b>3.8</b>	<b>212</b>	<b>10.2</b>	<b>460</b>	<b>Edge Start</b>		<b>5.1</b>	
<b>50</b>			<b>80</b>	<b>6.9</b>	<b>5</b>	<b>3.8</b>	<b>215</b>	<b>10.2</b>	<b>300</b>	<b>Edge Start</b>		<b>5.2</b>	

**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 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.

# TORCH REPLACEMENT PARTS

## Returns

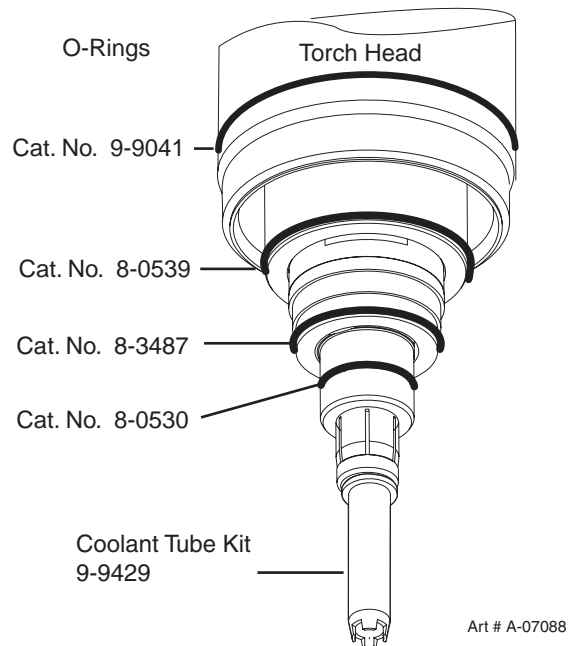
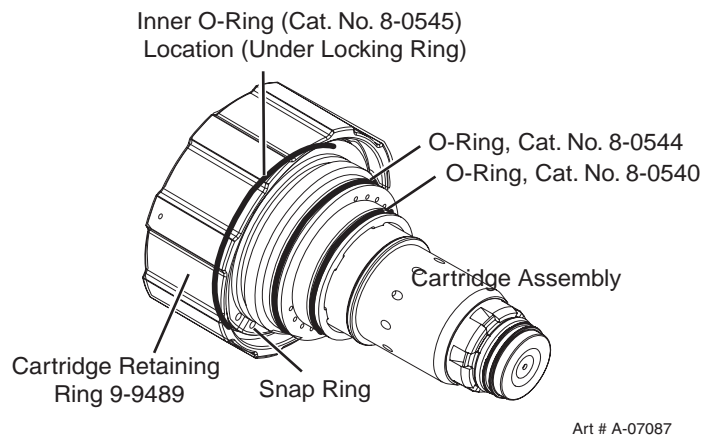
If a product must be returned for service, contact your authorized distributor. Materials returned without proper authorization will not be accepted.

## Ordering Information

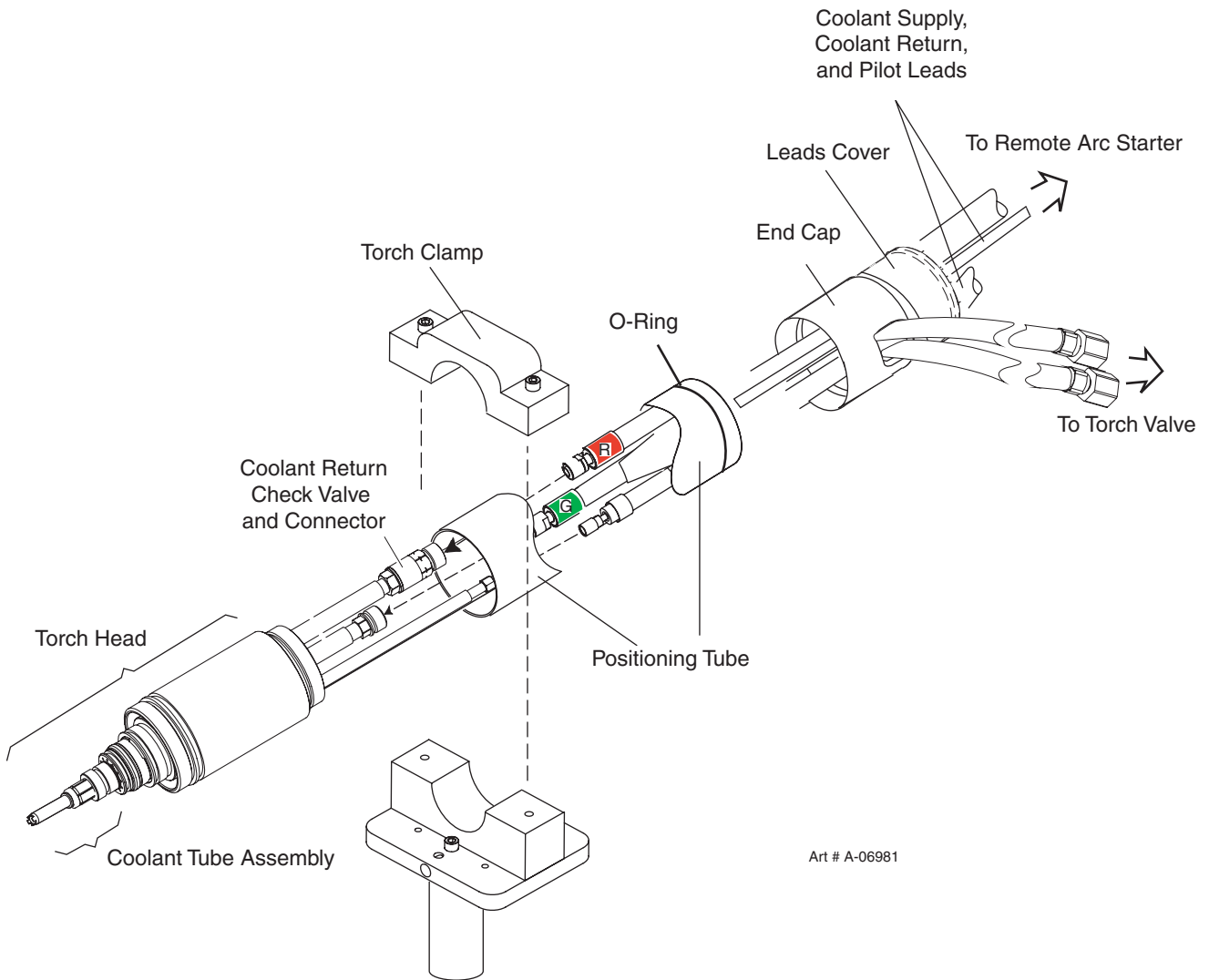
Order replacement parts by catalog number and complete description of the part or assembly. Also include the model and serial number of the machine or torch.

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

Qty.	Description	Catalog Number
1	O-Ring Lubricant (Christo-Lube MCG-129)	9-4893
1	Water Shield Regulator	8-6118
1	Coolant Tube Kit	9-9429
1	Torch Cartridge (includes Cartridge Tool)	35-1020
1	Cartridge Tool	9-9431
1	Cartridge Retaining Ring	9-9430
1	Shield Cup	35-1016



Qty.	Description	Catalog Number
1	XT-301 Torch Head Kit	35-1001
1	Torch Clamp Assembly	9-9336
1	Plasma Gas Hose	9-9450
1	Shield Gas Hose	9-9451
1	Torch Mounting Tube (includes Hardware Kit)	9-4700
1	Mounting Tube Hardware Kit (includes O-Ring)	9-4847
1	Ohmic Clip	9-9414



# XT-301™ Conventional Plasma Torch Auto-Cut™ 55-100 Amps

Art # A-07806

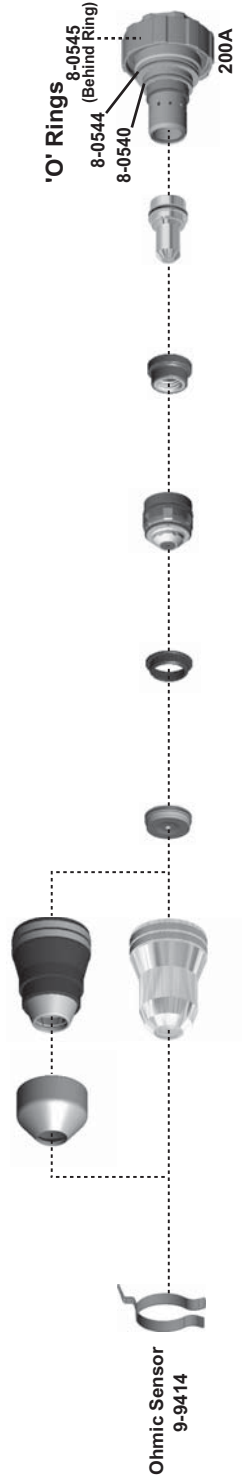


	Amps	Plasma/Shield Gas	Shield Cup	Shield Cap	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
<b>Mild Steel</b>	<b>55A</b>	Air Plasma / Air Shield	35-1016	35-1025	35-1272	35-1051	35-1041	35-1069	35-1020
		O2 Plasma / Air Shield	35-1016	35-1025	35-1272	35-1051	35-1041	35-1069	35-1020
	<b>100A</b>	Air Plasma / Air Shield	35-1016	35-1027	35-1272	35-1053	35-1041	35-1071	35-1020
		O2 Plasma / Air Shield	35-1016	35-1027	35-1272	35-1053	35-1041	35-1071	35-1020

<b>Stainless Steel Aluminum</b>	<b>55A</b>	Air Plasma / Air Shield	35-1016	35-1034	35-1272	35-1060	35-1041	35-1078	35-1020
		Air Plasma / Air Shield	35-1016	35-1027	35-1272	35-1053	35-1041	35-1071	35-1020
	<b>100A</b>	N2 Plasma / H2O Shield	35-1016	35-1034	35-1272	35-1053	35-1041	35-1089	35-1020
		H35 Plasma / N2 Shield	35-1016	35-1034	35-1272	35-1062	35-1041	35-1080	35-1020

# XT-301™ Conventional Plasma Torch Auto-Cut™ 200 Amps

## Auto-Cut™ 200 O<sub>2</sub>



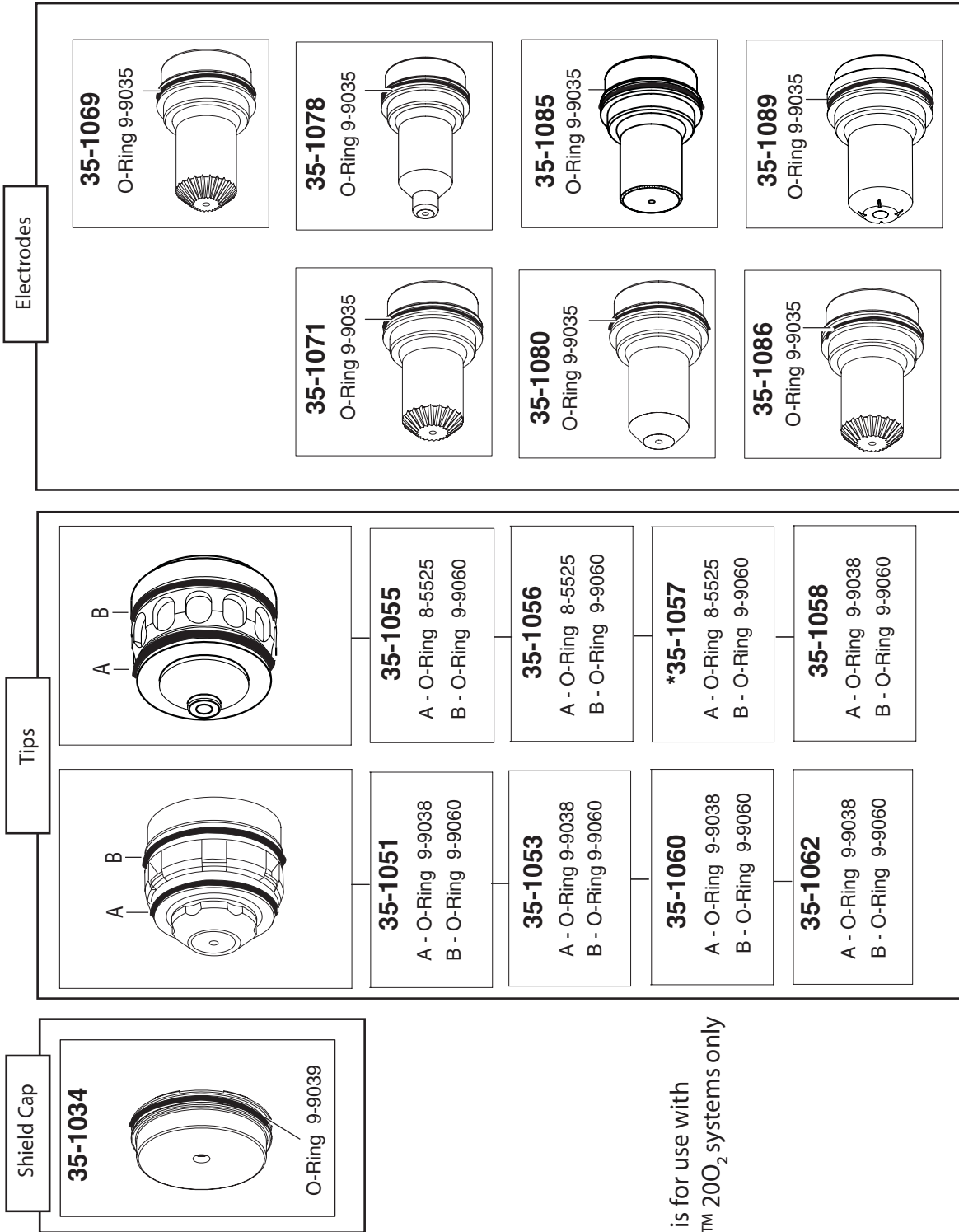
Art # A-07808

Mild Steel	Amps	Plasma/Shield Gas	Shield Retainer	Shield Cup	Shield Gas Distributor	Tip	Plasma Gas Distributor	Electrode	Cartridge
	200A								
	O <sub>2</sub> Plasma / Air Shield	35-1019	35-1018	35-1029	35-1281	35-1056	35-1046	35-1086	35-1020
	Air Plasma / Air Shield	35-1019	35-1018	35-1028	35-1280	35-1055	35-1041	35-1085	35-1020

Stainless Steel Aluminum	Air Plasma / Air Shield	35-1019	35-1018	35-1029	35-1281	35-1057	35-1046	35-1085	35-1020
	H35 Plasma / N <sub>2</sub> Shield	—	35-1016	35-1031 (≤ 1" (25mm)) 35-1032 (> 1" (25mm))	35-1273	35-1058	35-1043	35-1087	35-1020

O-Ring Selection for Torch Consumable Parts

Consumables O-Ring Locations and Catalog Numbers



\*35-1057 is for use with Auto-Cut™ 20O<sub>2</sub> systems only

Art # A-07248

# 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	Cartridge	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1022	Cartridge	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1068	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517577 Other Pat(s) Pending
35-1069	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517576 Other Pat(s) Pending
35-1070	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517576 Other Pat(s) Pending
35-1071	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517576 Other Pat(s) Pending
35-1072	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517576 Other Pat(s) Pending
35-1077	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566 Other Pat(s) Pending
35-1078	Electrode	US Pat No(s) 6946616; 6919526; D505963; 6989505; 6998566 Other Pat(s) Pending
35-1079	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566 Other Pat(s) Pending
35-1080	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517577 Other Pat(s) Pending
35-1085	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566 Other Pat(s) Pending
35-1086	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517576 Other Pat(s) Pending
35-1087	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517577 Other Pat(s) Pending
35-1088	Electrode	US Pat No(s) 6946616; 6919526; 6989505; 6998566; D517576 Other Pat(s) Pending
35-1040	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1041	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1043	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1044	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1046	Plasma Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1024	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1025	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1026	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1027	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1034	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1028	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1029	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1030	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1031	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1032	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1033	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1035	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1036	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1037	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1039	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1275	Shield Cap	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1016	Shield Cup	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1018	Shield Cup	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1082	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1272	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1273	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1274	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1280	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1281	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1282	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1283	Shield Gas Distributor	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1019	Shield Retainer	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1021	Shield Retainer	US Pat No(s) 6946616; 6919526; 6989505 Other Pat(s) Pending
35-1050	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; D519135; D524,336 Other Pat(s) Pending
35-1051	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; D519135; D524,336 Other Pat(s) Pending
35-1052	Tip	US Pat No(s) 6946616; 6919526; 6989505; 7005600; D519135; D524,336 Other Pat(s) Pending

### XT™-301 Plasma Cutting Torch Patents

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

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

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

<b>Catalog #</b>	<b>Description</b>
35-1027	Shield Cap
35-1028	Shield Cap
35-1029	Shield Cap
35-1030	Shield Cap
35-1032	Shield Cap

#### **NOTE**

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

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