

⊖ External HF Starter Required

Δ Tandem Controller Required

* Range is limited by power source rating, module rating, or feeder configuration

Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *
All	All	GMAW CV	STD CV		5	Pinch	10 — 45 V
		GMAW Power	Power Mode®		40	Pinch	0.1 — 40 kW
GMAW	0.8 mm	GMAW CV	CV	CO ₂	93	Pinch	75 — 1200 ipm (1.91 — 30.48 m/min)
			Argon Mix	94	75 — 1200 ipm (1.91 — 30.48 m/min)		
		GMAW Pulse	Pulse	Argon Mix	95	UltimArc®	65 — 1200 ipm (1.65 — 30.48 m/min)
			Precision Pulse™	Argon Mix	410		100 — 600 ipm (2.54 — 15.24 m/min)
	0.9 mm	GMAW CV	CV	CO ₂	138	Pinch	50 — 1200 ipm (1.27 — 30.48 m/min)
			Argon Mix	139	50 — 1200 ipm (1.27 — 30.48 m/min)		
		GMAW Pulse	Pulse	Argon Mix	140	UltimArc®	60 — 1200 ipm (1.52 — 30.48 m/min)
			RapidArc®	Argon Mix	141		75 — 1200 ipm (1.91 — 30.48 m/min)
	Precision Pulse™	Argon Mix	411	100 — 600 ipm (2.54 — 15.24 m/min)			
	1.0 mm	GMAW CV	CV	CO ₂	10	Pinch	50 — 1200 ipm (1.27 — 30.48 m/min)
			Argon Mix	11	50 — 800 ipm (1.27 — 20.32 m/min)		
		GMAW Pulse	Pulse	Argon Mix	12	UltimArc®	75 — 1200 ipm (1.91 — 30.48 m/min)
			RapidArc®	Argon Mix	13		60 — 1200 ipm (1.52 — 30.48 m/min)
	Precision Pulse™	Argon Mix	412	75 — 600 ipm (1.91 — 15.24 m/min)			
	1.2 mm	GMAW CV	CV	CO ₂	20	Pinch	50 — 670 ipm (1.27 — 17.02 m/min)
			Argon Mix	21	50 — 585 ipm (1.27 — 14.86 m/min)		
		GMAW Pulse	Pulse	Argon Mix	22	UltimArc®	60 — 600 ipm (1.52 — 15.24 m/min)
			RapidArc®	Argon Mix	18		60 — 715 ipm (1.52 — 18.16 m/min)
	Precision Pulse™	Argon Mix	413	75 — 600 ipm (1.91 — 15.24 m/min)			
	1.4 mm	GMAW CV	CV	CO ₂	24	Pinch	50 — 395 ipm (1.27 — 10.03 m/min)
			Argon Mix	25	50 — 370 ipm (1.27 — 9.4 m/min)		
		GMAW Pulse	Pulse	Argon Mix	26	UltimArc®	50 — 375 ipm (1.27 — 9.53 m/min)
			RapidArc®	Argon Mix	27		60 — 425 ipm (1.52 — 10.8 m/min)
	1.6 mm	GMAW CV	CV	Argon Mix	107	Pinch	50 — 290 ipm (1.27 — 7.37 m/min)
GMAW Pulse		Pulse	Argon Mix	108	UltimArc®	50 — 315 ipm (1.27 — 8 m/min)	
Stainless	0.8 mm	GMAW CV	CV	Argon Mix	61	Pinch	100 — 1200 ipm (2.54 — 30.48 m/min)
			Ar He CO ₂	63	100 — 1200 ipm (2.54 — 30.48 m/min)		
		GMAW Pulse	Pulse	Ar He CO ₂	64	UltimArc®	100 — 1200 ipm (2.54 — 30.48 m/min)
			Argon Mix	66	100 — 1200 ipm (2.54 — 30.48 m/min)		
	0.9 mm	GMAW CV	CV	Argon Mix	29	Pinch	75 — 1200 ipm (1.91 — 30.48 m/min)
			Argon Mix	30	60 — 1200 ipm (1.52 — 30.48 m/min)		
	GMAW Pulse	Pulse	Argon Mix	421	UltimArc®	100 — 600 ipm (2.54 — 15.24 m/min)	
		Precision Pulse™	Argon Mix	421		100 — 600 ipm (2.54 — 15.24 m/min)	
	1.0 mm	GMAW CV	CV	Argon Mix	31	Pinch	75 — 1200 ipm (1.91 — 30.48 m/min)
			Ar He CO ₂	33	75 — 935 ipm (1.91 — 23.75 m/min)		
		GMAW Pulse	Pulse	Ar He CO ₂	34	UltimArc®	60 — 1200 ipm (1.52 — 30.48 m/min)
			Argon Mix	36	60 — 1200 ipm (1.52 — 30.48 m/min)		
	Precision Pulse™	Argon Mix	422	UltimArc®	60 — 600 ipm (1.52 — 15.24 m/min)		
	1.2 mm	GMAW CV	CV	Argon Mix	41	Pinch	75 — 565 ipm (1.91 — 14.35 m/min)
			Ar He CO ₂	43	75 — 565 ipm (1.91 — 14.35 m/min)		
		GMAW Pulse	Pulse	Ar He CO ₂	44	UltimArc®	50 — 560 ipm (1.27 — 14.22 m/min)
			Argon Mix	46	50 — 800 ipm (1.27 — 20.32 m/min)		
	Precision Pulse™	Argon Mix	423	UltimArc®	50 — 400 ipm (1.27 — 10.16 m/min)		
	1.6 mm	GMAW CV	CV	Argon Mix	51	Pinch	50 — 285 ipm (1.27 — 7.24 m/min)
		GMAW Pulse	Pulse	Argon Mix	56	UltimArc®	50 — 305 ipm (1.27 — 7.75 m/min)

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Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *	
							ipm	(m/min)
Aluminum (AlSi)	1.0 mm	GMAW CV	CV	Argon	148	Pinch	125 – 800	ipm (3.18 – 20.32 m/min)
		GMAW Pulse	Pulse	Argon	149	UltimArc®	125 – 800	ipm (3.18 – 20.32 m/min)
			CC Pulse	Argon	150		125 – 800	ipm (3.18 – 20.32 m/min)
	GMAW Pulse on Pulse*	Pulse on Pulse*	Argon	98	Frequency	100 – 500	ipm (2.54 – 12.7 m/min)	
	1.2 mm	GMAW CV	CV	Argon	71	Pinch	125 – 700	ipm (3.18 – 17.78 m/min)
		GMAW Pulse	Pulse	Argon	72	UltimArc®	85 – 600	ipm (2.16 – 15.24 m/min)
			CC Pulse	Argon	69		85 – 600	ipm (2.16 – 15.24 m/min)
	GMAW Pulse on Pulse*	Pulse on Pulse*	Argon	99	Frequency	85 – 500	ipm (2.16 – 12.7 m/min)	
	1.6 mm	GMAW CV	CV	Argon	73	Pinch	75 – 375	ipm (1.91 – 9.53 m/min)
		GMAW Pulse	Pulse	Argon	74	UltimArc®	75 – 350	ipm (1.91 – 8.89 m/min)
			CC Pulse	Argon	79		75 – 350	ipm (1.91 – 8.89 m/min)
	GMAW Pulse on Pulse*	Pulse on Pulse*	Argon	100	Frequency	80 – 400	ipm (2.03 – 10.16 m/min)	
Aluminum (AlMg)	1.0 mm	GMAW CV	CV	Argon	151	Pinch	175 – 750	ipm (4.45 – 19.05 m/min)
		GMAW Pulse	Pulse	Argon	152	UltimArc®	125 – 700	ipm (3.18 – 17.78 m/min)
			CC Pulse	Argon	153		125 – 700	ipm (3.18 – 17.78 m/min)
	GMAW Pulse on Pulse*	Pulse on Pulse*	Argon	101	Frequency	140 – 800	ipm (3.56 – 20.32 m/min)	
	1.2 mm	GMAW CV	CV	Argon	75	Pinch	125 – 750	ipm (3.18 – 19.05 m/min)
		GMAW Pulse	Pulse	Argon	76	UltimArc®	85 – 700	ipm (2.16 – 17.78 m/min)
			CC Pulse	Argon	70		85 – 700	ipm (2.16 – 17.78 m/min)
	GMAW Pulse on Pulse*	Pulse on Pulse*	Argon	102	Frequency	100 – 600	ipm (2.54 – 15.24 m/min)	
	1.6 mm	GMAW CV	CV	Argon	77	Pinch	125 – 500	ipm (3.18 – 12.7 m/min)
		GMAW Pulse	Pulse	Argon	78	UltimArc®	100 – 500	ipm (2.54 – 12.7 m/min)
			CC Pulse	Argon	80		100 – 450	ipm (2.54 – 11.43 m/min)
	GMAW Pulse on Pulse*	Pulse on Pulse*	Argon	103	Frequency	75 – 350	ipm (1.91 – 8.89 m/min)	
Metal Core	1.2 mm	GMAW CV	CV	Argon Mix	81	Pinch	50 – 700	ipm (1.27 – 17.78 m/min)
		GMAW Pulse	Pulse	Argon Mix	82	UltimArc®	50 – 700	ipm (1.27 – 17.78 m/min)
	1.4 mm	GMAW Pulse	Pulse	Argon Mix	84	UltimArc®	50 – 405	ipm (1.27 – 10.29 m/min)
	1.6 mm	GMAW CV	CV	Argon Mix	85	Pinch	50 – 405	ipm (1.27 – 10.29 m/min)
		GMAW Pulse	Pulse	Argon Mix	86	UltimArc®	50 – 450	ipm (1.27 – 11.43 m/min)
SiBr	1.0mm	GMAW Pulse	Pulse	Argon	192	UltimArc®	80 – 985	ipm (2.03 – 25.02 m/min)
	1.2mm	GMAW Pulse	Pulse	Argon	191	UltimArc®	50 – 600	ipm (1.27 – 15.24 m/min)
Cu	1.0mm	GMAW Pulse	Pulse	Argon Helium	198	UltimArc®	75 – 500	ipm (1.91 – 12.7 m/min)
	1.2mm	GMAW Pulse	Pulse	Argon Helium	196	UltimArc®	75 – 500	ipm (1.91 – 12.7 m/min)
NiCr	1.0mm	GMAW Pulse	Pulse	Ar/ Ar He	502	UltimArc®	75 – 800	ipm (1.91 – 20.32 m/min)
	1.2mm	GMAW Pulse	Pulse	Ar/ Ar He	504	UltimArc®	75 – 600	ipm (1.91 – 15.24 m/min)

Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *		
							ipm	(m/min)	
FCAW	Flux Core	FCAW-S	Self Shield CV	NA	6	Pinch	10 – 45	V	
		FCAW-G	Gas Shield CV		7	Pinch	10 – 45	V	
	Cored Wire	1.2 mm	FCAW-G	CV	CO ₂	90	Pinch	175 – 600	ipm (4.45 – 15.24 m/min)
					Argon Mix	91		175 – 600	ipm (4.45 – 15.24 m/min)
		1.4 mm	FCAW-G	CV	CO ₂	187	Pinch	150 – 500	ipm (3.81 – 12.7 m/min)
					Argon Mix	188		150 – 500	ipm (3.81 – 12.7 m/min)
		1.6 mm	FCAW-G	CV	CO ₂	189	Pinch	125 – 400	ipm (3.18 – 10.16 m/min)
					Argon Mix	190		125 – 400	ipm (3.18 – 10.16 m/min)

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SMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *
	NA	NA	DCEP SMAW	SMAW Soft	NA	NA	1	Arc Force, Hot Start
		SMAW Crisp		NA	NA	2	Arc Force, Hot Start	15 — 415 A
		SMAW Pipe		NA	NA	4	Arc Force	50 — 250 A

GTAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *
	NA	NA	DCEN GTAW	Touch Start TIG	Ar / He	Ar / He	3	Hot Start
Touch Start TIG Pulse				Ar / He	Ar / He	8	Frequency, Background, Hot Start	5 — 415 A
HF TIG (⊖)				Ar / He	Ar / He	375	Hot Start	5 — 415 A
HF TIG Pulse (⊖)				Ar / He	Ar / He	376	Frequency, Background, Hot Start	5 — 415 A

CAG	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *
	NA	NA	CAG	Arc Gouge	Compressed Air	Compressed Air	9	

GMAW-Tandem	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range *
		1.0 mm	GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	Argon Mix	402	UltimArc®, Phase Angle
Sync Pulse Trail				Argon Mix	Argon Mix	403	UltimArc®	150 — 800 ipm (3.81 — 20.32 m/min)
HotWire Pulse Trail				Argon Mix	Argon Mix	461		80 — 800 ipm (2.03 — 20.32 m/min)
1.2 mm		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	Argon Mix	404	UltimArc®, Phase Angle	100 — 700 ipm (2.54 — 17.78 m/min)
			Sync Pulse Trail	Argon Mix	Argon Mix	405	UltimArc®	100 — 700 ipm (2.54 — 17.78 m/min)
			HotWire Pulse Trail	Argon Mix	Argon Mix	462		75 — 780 ipm (1.91 — 19.81 m/min)
1.4 mm		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	Argon Mix	406	UltimArc®, Phase Angle	100 — 585 ipm (2.54 — 14.86 m/min)
			Sync Pulse Trail	Argon Mix	Argon Mix	407	UltimArc®	100 — 585 ipm (2.54 — 14.86 m/min)
			HotWire Pulse Trail	Argon Mix	Argon Mix	463		50 — 575 ipm (1.27 — 14.61 m/min)