

§ Advanced Module Required

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Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
								All
All	All	GMAW CV	STD CV		5	Pinch	10 - 45 V	
		GMAW Power	Power Mode®		40	Pinch	0.1 - 23 kW	
GMAW	Steel	0.030	GMAW CV	CV	CO ₂	93	Pinch	75 - 1200 ipm
				Argon Mix	94	75 - 1200 ipm		
		GMAW Pulse	Pulse	Argon Mix	95	UltimArc®	65 - 1200 ipm	
		0.035	GMAW CV	CV	CO ₂	10	Pinch	50 - 1200 ipm
				Argon Mix	11	50 - 1200 ipm		
			GMAW Pulse	Pulse	Argon Mix	12	UltimArc®	60 - 1200 ipm
				RapidArc®	Argon Mix	13		60 - 1200 ipm
				Precision Pulse™	Argon Mix	411		100 - 600 ipm
			Rapid X™(‡)	Argon Mix	272	75 - 1200 ipm		
		GMAW STT®	Synergic STT®(‡)	CO ₂	324	UltimArc®, Hot Start	100 - 225 ipm	
			Argon Mix	325	100 - 225 ipm			
		NonSynergic STT®(‡)	CO ₂	304	Peak, Background, Tailout, Hot Start	100 - 300 ipm		
	Argon Mix	305	100 - 300 ipm					
	0.040	GMAW CV	CV	CO ₂	138	Pinch	50 - 1200 ipm	
			Argon Mix	139	50 - 1200 ipm			
		GMAW Pulse	Pulse	Argon Mix	140	UltimArc®	60 - 1200 ipm	
			RapidArc®	Argon Mix	141		60 - 1200 ipm	
			Precision Pulse™	Argon Mix	412		75 - 600 ipm	
		Rapid X™(‡)	Argon Mix	273	75 - 800 ipm			
		GMAW STT®	Synergic STT®(‡)	CO ₂	326	UltimArc®, Hot Start	90 - 225 ipm	
	Argon Mix		327	90 - 225 ipm				
	NonSynergic STT®(‡)	CO ₂	306	Peak, Background, Tailout, Hot Start	90 - 225 ipm			
	Argon Mix	307	90 - 225 ipm					
	0.045	GMAW CV	CV	CO ₂	20	Pinch	50 - 800 ipm	
			Argon Mix	21	50 - 800 ipm			
		GMAW Pulse	Pulse	Argon Mix	22	UltimArc®	50 - 800 ipm	
			RapidArc®	Argon Mix	18		75 - 800 ipm	
			Precision Pulse™	Argon Mix	413		75 - 600 ipm	
		Rapid X™(‡)	Argon Mix	274	100 - 800 ipm			
	GMAW STT®	Synergic STT®(‡)	CO ₂	328	UltimArc®, Hot Start	90 - 200 ipm		
Argon Mix		329	90 - 200 ipm					
NonSynergic STT®(‡)	CO ₂	308	Peak, Background, Tailout, Hot Start	90 - 225 ipm				
Argon Mix	309	90 - 225 ipm						
0.052	GMAW CV	CV	CO ₂	24	Pinch	50 - 750 ipm		
		Argon Mix	25	50 - 700 ipm				
	GMAW Pulse	Pulse	Argon Mix	26	UltimArc®	50 - 700 ipm		
		RapidArc®	Argon Mix	27		60 - 750 ipm		
		Precision Pulse™	Argon Mix	414		75 - 500 ipm		
	Rapid X™(‡)	Argon Mix	275	75 - 600 ipm				
	GMAW STT®	Synergic STT®(‡)	CO ₂	330	UltimArc®, Hot Start	75 - 175 ipm		
Argon Mix		331	75 - 175 ipm					
NonSynergic STT®(‡)	CO ₂	310	Peak, Background, Tailout, Hot Start	90 - 150 ipm				
Argon Mix	311	75 - 150 ipm						
1/16	GMAW CV	CV	Argon Mix	107	Pinch	50 - 450 ipm		
	GMAW Pulse	Pulse	Argon Mix	108	UltimArc®	50 - 500 ipm		

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GMAW	Stainless	0.030	GMAW CV	CV	Argon Mix	61	Pinch	100 - 1200 ipm	
					He Ar CO ₂	63		100 - 1200 ipm	
			GMAW Pulse	Pulse	He Ar CO ₂	64	UltimArc®	90 - 1200 ipm	
					Argon Mix	66		80 - 1200 ipm	
				Precision Pulse™	Argon Mix	420	UltimArc®	100 - 800 ipm	
					He Ar CO ₂	430		100 - 800 ipm	
		0.035	GMAW CV	CV	Argon Mix	31	Pinch	75 - 1200 ipm	
					He Ar CO ₂	33		75 - 1200 ipm	
				Pulse	He Ar CO ₂	34	UltimArc®	75 - 1200 ipm	
					Argon Mix	36		60 - 1200 ipm	
			Precision Pulse™	Argon Mix	421	UltimArc®	100 - 600 ipm		
				He Ar CO ₂	431		100 - 700 ipm		
			Rapid X™(‡)	Argon Mix	282	UltimArc®	100 - 800 ipm		
			GMAW STT®	Synergic STT®(‡)	Argon Mix	364	UltimArc®, Hot Start	100 - 300 ipm	
					He Ar CO ₂	365		100 - 250 ipm	
				NonSynergic STT®(‡)	Argon Mix	344	Peak, Background, Tailout, Hot Start	100 - 300 ipm	
		He Ar CO ₂	345	100 - 300 ipm					
		0.040	GMAW STT®	Synergic STT®(‡)	Argon Mix	366	UltimArc®, Hot Start	100 - 300 ipm	
	He Ar CO ₂				367	100 - 250 ipm			
	NonSynergic STT®(‡)			Argon Mix	346	Peak, Background, Tailout, Hot Start	100 - 300 ipm		
				He Ar CO ₂	347		100 - 300 ipm		
	0.045	GMAW CV	CV	Argon Mix	41	Pinch	75 - 800 ipm		
				He Ar CO ₂	43		75 - 800 ipm		
			GMAW Pulse	Pulse	He Ar CO ₂	44	UltimArc®	75 - 800 ipm	
					Argon Mix	46		50 - 800 ipm	
				Precision Pulse™	Argon Mix	423	UltimArc®	50 - 400 ipm	
					He Ar CO ₂	433		60 - 400 ipm	
		Rapid X™(‡)	Argon Mix	284	UltimArc®	100 - 800 ipm			
		GMAW STT®	Synergic STT®(‡)	Argon Mix	368	UltimArc®, Hot Start	90 - 200 ipm		
				He Ar CO ₂	369		90 - 200 ipm		
NonSynergic STT®(‡)			Argon Mix	348	Peak, Background, Tailout, Hot Start	90 - 225 ipm			
He Ar CO ₂		349	90 - 225 ipm						
1/16		GMAW CV	CV	Argon Mix	51	Pinch	50 - 515 ipm		
	GMAW Pulse	Pulse	Argon Mix	56	UltimArc®	50 - 635 ipm			
Metal Core	0.035	GMAW AC Pulse	Rapid Z™(§)	Argon Mix	472	UltimArc®	75 - 900 ipm		
				Argon Mix	473		70 - 700 ipm		
	0.045	GMAW CV	CV	Pulse	Argon Mix	81	Pinch	100 - 700 ipm	
					Argon Mix	82		UltimArc®	50 - 700 ipm
					Argon Mix	87			75 - 800 ipm
					Argon Mix	294			75 - 800 ipm
					0.052	GMAW CV		CV	Pulse
	Argon Mix	84	UltimArc®	50 - 600 ipm					
	Argon Mix	88		60 - 800 ipm					
	1/16	GMAW Pulse	RapidArc®	Rapid X™(‡)	Argon Mix	295	UltimArc®	60 - 650 ipm	
					Argon Mix	85		Pinch	50 - 450 ipm
					Argon Mix	86			UltimArc®
					Argon Mix	89		60 - 450 ipm	
					Argon Mix	296		75 - 450 ipm	

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	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	GMAW	Aluminum 4XXX	0.035	GMAW CV	CV	Argon	148	Pinch
GMAW Pulse				Pulse	Argon	149	UltimArc®	125 - 800 ipm
				CC Pulse	Argon	150		125 - 800 ipm
GMAW Pulse on Pulse®				Pulse on Pulse®	Argon	98	Frequency	125 - 800 ipm
GMAW AC Pulse			AC Pulse (§)	Argon	391	UltimArc®	125 - 700 ipm	
3/64			GMAW CV	CV	Argon	71	Pinch	125 - 700 ipm
			GMAW Pulse	Pulse	Argon	72	UltimArc®	85 - 600 ipm
				CC Pulse	Argon	69		85 - 600 ipm
			GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	99	Frequency	85 - 500 ipm
GMAW AC Pulse			AC Pulse (§)	Argon	393	UltimArc®	100 - 500 ipm	
1/16			GMAW CV	CV	Argon	73	Pinch	75 - 375 ipm
			GMAW Pulse	Pulse	Argon	74	UltimArc®	75 - 350 ipm
		CC Pulse		Argon	79	75 - 350 ipm		
		GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	100	Frequency	80 - 400 ipm	
GMAW AC Pulse		AC Pulse (§)	Argon	394	UltimArc®	100 - 400 ipm		
Aluminum 5XXX		0.035	GMAW CV	CV	Argon	151	Pinch	175 - 750 ipm
			GMAW Pulse	Pulse	Argon	152	UltimArc®	150 - 800 ipm
				CC Pulse	Argon	153		150 - 800 ipm
			GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	101	Frequency	140 - 800 ipm
		GMAW AC Pulse	AC Pulse (§)	Argon	396	UltimArc®	125 - 800 ipm	
		3/64	GMAW CV	CV	Argon	75	Pinch	125 - 750 ipm
			GMAW Pulse	Pulse	Argon	76	UltimArc®	85 - 700 ipm
				CC Pulse	Argon	70		85 - 700 ipm
			GMAW Pulse on Pulse®	Pulse on Pulse®	Argon	102	Frequency	100 - 600 ipm
	GMAW AC Pulse	AC Pulse (§)	Argon	398	UltimArc®	85 - 600 ipm		
	1/16	GMAW CV	CV	Argon	77	Pinch	125 - 500 ipm	
		GMAW Pulse	Pulse	Argon	78	UltimArc®	100 - 500 ipm	
CC Pulse			Argon	80	100 - 450 ipm			
GMAW Pulse on Pulse®		Pulse on Pulse®	Argon	103	Frequency	75 - 350 ipm		
GMAW AC Pulse	AC Pulse (§)	Argon	399	UltimArc®	100 - 400 ipm			
SiBr	0.035	GMAW Pulse	Pulse	Argon	192	UltimArc®	80 - 1200 ipm	
	0.045	GMAW Pulse	Pulse	Argon	191	UltimArc®	50 - 600 ipm	
Cu	0.035	GMAW Pulse	Pulse	Argon Helium	198	UltimArc®	100 - 700 ipm	
	0.045	GMAW Pulse	Pulse	Argon Helium	196	UltimArc®	75 - 500 ipm	
NiCr	0.035	GMAW Pulse	Pulse	Ar/ Ar He	501	UltimArc®	75 - 800 ipm	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	503	UltimArc®	75 - 600 ipm	
NiCu	0.035	GMAW Pulse	Pulse	Ar/ Ar He	507	UltimArc®	75 - 800 ipm	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	509	UltimArc®	75 - 600 ipm	
NiFe-CI	0.035	GMAW Pulse	Pulse	Ar/ Ar He	513	UltimArc®	75 - 800 ipm	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	515	UltimArc®	75 - 600 ipm	
Ni-1	0.035	GMAW Pulse	Pulse	Ar/ Ar He	519	UltimArc®	75 - 800 ipm	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	521	UltimArc®	75 - 600 ipm	
Ni-CI	0.035	GMAW Pulse	Pulse	Ar/ Ar He	525	UltimArc®	75 - 800 ipm	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	527	UltimArc®	75 - 500 ipm	

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FCAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	Flux Core	All		FCAW-S	STD CV	NA	6	Pinch
FCAW-G				STD CV		7	Pinch	10 - 45 V
0.045			FCAW-G	CV	CO ₂	90	Pinch	175 - 600 ipm
					Argon Mix	91		175 - 600 ipm
0.052			FCAW-G	CV	CO ₂	187	Pinch	150 - 500 ipm
					Argon Mix	188		150 - 500 ipm
1/16			FCAW-G	CV	CO ₂	189	Pinch	125 - 400 ipm
					Argon Mix	190		125 - 400 ipm

SMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	NA	NA		DCEP SMAW	SMAW Soft	NA	1	Arc Force, Hot Start
SMAW Crisp					NA	2	Arc Force, Hot Start	15 - 555 A
SMAW Pipe					NA	4	Arc Force	50 - 250 A
DCEN SMAW				SMAW DC- (§)	NA	379	Arc Force, Hot Start	15 - 350 A
AC SMAW				AC SMAW (§)	NA	374	Arc Force, Hot Start, Frequency	15 - 350 A

GTAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	NA	NA		DCEN GTAW	GTAW Touch Start	Argon	3	Hot Start
GTAW-P					Argon	8	Hot Start, Frequency, Background	5 - 555 A
GTAW HF (§)					Argon	375	Hot Start	5 - 450 A
GTAW-P HF (§)					Argon	376	Hot Start, Frequency, Background	5 - 450 A
AC GTAW				Touch Start AC GTAW (§)	Argon	377	Hot Start, Frequency, Balance, Offset	10 - 350 A
				HF Start AC GTAW (§)	Argon	378	Hot Start, Frequency, Balance, Offset	10 - 350 A

CAG	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	NA	NA	CAG	CAG	Compressed Air	9		60 - 555 A

GMAW-Tandem	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)
	Steel	0.035	GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	400	UltimArc®	100 - 1000 ipm
Sync Pulse Trail				Argon Mix	401	100 - 800 ipm		
HotWire Pulse Trail				Argon Mix	460	80 - 900 ipm		
0.040		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	402	UltimArc®	150 - 800 ipm	
			Sync Pulse Trail	Argon Mix	403		150 - 800 ipm	
			HotWire Pulse Trail	Argon Mix	461		80 - 800 ipm	
0.045		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	404	UltimArc®	100 - 700 ipm	
			Sync Pulse Trail	Argon Mix	405		100 - 700 ipm	
			HotWire Pulse Trail	Argon Mix	462		75 - 800 ipm	
0.052		GMAW Tandem (Δ)	Sync Pulse Lead	Argon Mix	406	UltimArc®	100 - 800 ipm	
			Sync Pulse Trail	Argon Mix	407		100 - 800 ipm	
			HotWire Pulse Trail	Argon Mix	463		50 - 800 ipm	