

Weld Set Reference: Z245301
Power Wave® S500/R450/J350 (Imperial units)



§ Advanced Module Required

⊖ External HF Starter Required – Three Phase Input Required

▣ STT® Module Required

Δ Tandem Controller Required

‡ STT® or Advanced Module Required

□ Availability of mode determined by output rating of equipment setup

* Maximum 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 — 23 kW
GMAW	0.030	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)
	0.035	GMAW CV	CV	CO ₂	10	Pinch	50 — 1200 ipm (1.27 — 30.48 m/min)
				Argon Mix	11		50 — 1200 ipm (1.27 — 30.48 m/min)
		GMAW Pulse	Pulse	Argon Mix	12		60 — 1200 ipm (1.52 — 30.48 m/min)
			RapidArc®	Argon Mix	13		60 — 1200 ipm (1.52 — 30.48 m/min)
			Precision Pulse™	Argon Mix	411	UltimArc®	100 — 600 ipm (2.54 — 15.24 m/min)
			Rapid X®(‡)	Argon Mix	272		75 — 1200 ipm (1.91 — 30.48 m/min)
			Rapid X® LS(‡)	Argon Mix	590		100 — 800 ipm (2.54 — 20.32 m/min)
			Low Fume Pulse™(‡)	Argon Mix	550		75 — 1200 ipm (1.91 — 30.48 m/min)
		GMAW STT®	Synergic STT®(‡)	CO ₂	324	UltimArc®, Hot Start	100 — 225 ipm (2.54 — 5.72 m/min)
				Argon Mix	325		100 — 225 ipm (2.54 — 5.72 m/min)
			NonSynergic STT®(‡)	CO ₂	304	Peak, Background, Tailout, Hot Start	100 — 300 ipm (2.54 — 7.62 m/min)
			Argon Mix	305		100 — 300 ipm (2.54 — 7.62 m/min)	
	GMAW AC STT®	Synergic AC STT®(§)	CO ₂	380	Balance, UltimArc®	50 — 200 ipm (1.27 — 5.08 m/min)	
		Argon Mix	381		50 — 200 ipm (1.27 — 5.08 m/min)		
	0.040	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		60 — 1200 ipm (1.52 — 30.48 m/min)
			RapidArc®	Argon Mix	141		60 — 1200 ipm (1.52 — 30.48 m/min)
			Precision Pulse™	Argon Mix	412	UltimArc®	75 — 600 ipm (1.91 — 15.24 m/min)
			Rapid X®(‡)	Argon Mix	273		75 — 800 ipm (1.91 — 20.32 m/min)
			Rapid X® LS(‡)	Argon Mix	592		100 — 800 ipm (2.54 — 20.32 m/min)
			Low Fume Pulse™(‡)	Argon Mix	551		75 — 800 ipm (1.91 — 20.32 m/min)
		GMAW STT®	Synergic STT®(‡)	CO ₂	326	UltimArc®, Hot Start	90 — 225 ipm (2.29 — 5.72 m/min)
				Argon Mix	327		90 — 225 ipm (2.29 — 5.72 m/min)
			NonSynergic STT®(‡)	CO ₂	306	Peak, Background, Tailout, Hot Start	90 — 225 ipm (2.29 — 5.72 m/min)
			Argon Mix	307		90 — 225 ipm (2.29 — 5.72 m/min)	
	GMAW AC STT®	Synergic AC STT®(§)	CO ₂	382	Balance, UltimArc®	45 — 185 ipm (1.14 — 4.7 m/min)	
		Argon Mix	383		45 — 185 ipm (1.14 — 4.7 m/min)		
	0.045	GMAW CV	CV	CO ₂	20	Pinch	50 — 800 ipm (1.27 — 20.32 m/min)
				Argon Mix	21		50 — 800 ipm (1.27 — 20.32 m/min)
		GMAW Pulse	Pulse	Argon Mix	22		50 — 800 ipm (1.27 — 20.32 m/min)
			RapidArc®	Argon Mix	18		75 — 800 ipm (1.91 — 20.32 m/min)
			Precision Pulse™	Argon Mix	413	UltimArc®	75 — 600 ipm (1.91 — 15.24 m/min)
			Rapid X®(‡)	Argon Mix	274		100 — 800 ipm (2.54 — 20.32 m/min)
			Rapid X® LS(‡)	Argon Mix	594		100 — 600 ipm (2.54 — 15.24 m/min)
			Low Fume Pulse™(‡)	Argon Mix	552		100 — 800 ipm (2.54 — 20.32 m/min)
		GMAW STT®	Synergic STT®(‡)	CO ₂	328	UltimArc®, Hot Start	90 — 200 ipm (2.29 — 5.08 m/min)
				Argon Mix	329		90 — 200 ipm (2.29 — 5.08 m/min)
			NonSynergic STT®(‡)	CO ₂	308	Peak, Background, Tailout, Hot Start	90 — 225 ipm (2.29 — 5.72 m/min)
		Argon Mix	309		90 — 225 ipm (2.29 — 5.72 m/min)		
GMAW AC STT®	Synergic AC STT®(§)	CO ₂	384	Balance, UltimArc®	40 — 170 ipm (1.02 — 4.32 m/min)		
	Argon Mix	385		40 — 170 ipm (1.02 — 4.32 m/min)			
0.052	GMAW CV	CV (□)	CO ₂	24	Pinch	50 — 750 ipm (1.27 — 19.05 m/min)	
			Argon Mix	25		50 — 700 ipm (1.27 — 17.78 m/min)	
	GMAW Pulse	Pulse (□)	Argon Mix	26		50 — 700 ipm (1.27 — 17.78 m/min)	
		RapidArc® (□)	Argon Mix	27		60 — 750 ipm (1.52 — 19.05 m/min)	
		Precision Pulse™ (□)	Argon Mix	414	UltimArc®	75 — 500 ipm (1.91 — 12.7 m/min)	
		Rapid X®(‡,□)	Argon Mix	275		75 — 600 ipm (1.91 — 15.24 m/min)	
		Low Fume Pulse™(‡,□)	Argon Mix	553		75 — 600 ipm (1.91 — 15.24 m/min)	
	GMAW STT®	Synergic STT®(‡,□)	CO ₂	330	UltimArc®, Hot Start	75 — 175 ipm (1.91 — 4.45 m/min)	
			Argon Mix	331		75 — 175 ipm (1.91 — 4.45 m/min)	
		NonSynergic STT®(‡,□)	CO ₂	310	Peak, Background, Tailout, Hot Start	90 — 150 ipm (2.29 — 3.81 m/min)	
		Argon Mix	311		75 — 150 ipm (1.91 — 3.81 m/min)		
1/16	GMAW CV	CV (□)	Argon Mix	107	Pinch	50 — 650 ipm (1.27 — 16.51 m/min)	
	GMAW Pulse	Pulse (□)	Argon Mix	108	UltimArc®	50 — 500 ipm (1.27 — 12.7 m/min)	

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Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)						
							ipm	(m/min)					
Stainless	0.030	GMAW CV	CV	Argon Mix	61	Pinch	100	1200	ipm	(2.54 – 30.48 m/min)			
				He Ar CO ₂	63		100	1200	ipm	(2.54 – 30.48 m/min)			
		GMAW Pulse	Pulse	He Ar CO ₂	64	UltimArc®	90	1200	ipm	(2.29 – 30.48 m/min)			
				Argon Mix	66		80	1200	ipm	(2.03 – 30.48 m/min)			
				Precision Pulse™	Argon Mix		420	UltimArc®	100	800	ipm	(2.54 – 20.32 m/min)	
					He Ar CO ₂		430		100	800	ipm	(2.54 – 20.32 m/min)	
		0.035	GMAW CV	CV	Argon Mix	31	Pinch	75	1200	ipm	(1.91 – 30.48 m/min)		
					He Ar CO ₂	33		75	1200	ipm	(1.91 – 30.48 m/min)		
	GMAW Pulse				Pulse	He Ar CO ₂		34	UltimArc®	75	1200	ipm	(1.91 – 30.48 m/min)
						Argon Mix		36		60	1200	ipm	(1.52 – 30.48 m/min)
	GMAW Pulse		Precision Pulse™	Argon Mix	421	UltimArc®	100	600	ipm	(2.54 – 15.24 m/min)			
				He Ar CO ₂	431		100	700	ipm	(2.54 – 17.78 m/min)			
				Rapid X®(‡)	Argon Mix		282	UltimArc®	100	800	ipm	(2.54 – 20.32 m/min)	
					He Ar CO ₂		364		100	300	ipm	(2.54 – 7.62 m/min)	
	GMAW STT®	Synergic STT®(‡)	Argon Mix	365	UltimArc®, Hot Start	100	250	ipm	(2.54 – 6.35 m/min)				
			He Ar CO ₂	344		100	300	ipm	(2.54 – 7.62 m/min)				
			NonSynergic STT®(‡)	Argon Mix		344	Peak, Background, Tailout, Hot Start	100	300	ipm	(2.54 – 7.62 m/min)		
				He Ar CO ₂		345		100	300	ipm	(2.54 – 7.62 m/min)		
	0.040	GMAW STT®	Synergic STT®(‡)	Argon Mix	366	UltimArc®, Hot Start	100	300	ipm	(2.54 – 7.62 m/min)			
				He Ar CO ₂	367		100	250	ipm	(2.54 – 6.35 m/min)			
				NonSynergic STT®(‡)	Argon Mix		346	Peak, Background, Tailout, Hot Start	100	300	ipm	(2.54 – 7.62 m/min)	
					He Ar CO ₂		347		100	300	ipm	(2.54 – 7.62 m/min)	
	0.045	GMAW CV	CV	Argon Mix	41	Pinch	75	800	ipm	(1.91 – 20.32 m/min)			
				He Ar CO ₂	43		75	800	ipm	(1.91 – 20.32 m/min)			
				GMAW Pulse	Pulse		He Ar CO ₂	44	UltimArc®	75	800	ipm	(1.91 – 20.32 m/min)
							Argon Mix	46		50	800	ipm	(1.27 – 20.32 m/min)
		GMAW Pulse	Precision Pulse™	Argon Mix	423	UltimArc®	50	400	ipm	(1.27 – 10.16 m/min)			
				He Ar CO ₂	433		60	400	ipm	(1.52 – 10.16 m/min)			
Rapid X®(‡)				Argon Mix	284		UltimArc®	100	800	ipm	(2.54 – 20.32 m/min)		
				He Ar CO ₂	368			90	200	ipm	(2.29 – 5.08 m/min)		
GMAW STT®		Synergic STT®(‡)	Argon Mix	369	UltimArc®, Hot Start	90	200	ipm	(2.29 – 5.08 m/min)				
			He Ar CO ₂	348		90	225	ipm	(2.29 – 5.72 m/min)				
			NonSynergic STT®(‡)	Argon Mix		348	Peak, Background, Tailout, Hot Start	90	225	ipm	(2.29 – 5.72 m/min)		
				He Ar CO ₂		349		90	225	ipm	(2.29 – 5.72 m/min)		
1/16	GMAW CV	CV (□)	Argon Mix	51	Pinch	50	515	ipm	(1.27 – 13.08 m/min)				
	GMAW Pulse	Pulse (□)	Argon Mix	56	UltimArc®	50	635	ipm	(1.27 – 16.13 m/min)				
Metal Core	0.035	GMAW AC Pulse	Rapid Z®(§)	Argon Mix	472	UltimArc®	75	900	ipm	(1.91 – 22.86 m/min)			
	0.040	GMAW AC Pulse	Rapid Z®(§)	Argon Mix	473	UltimArc®	70	700	ipm	(1.78 – 17.78 m/min)			
	0.045	GMAW CV	CV	Argon Mix	81	Pinch	100	700	ipm	(2.54 – 17.78 m/min)			
				Argon Mix	82		50	700	ipm	(1.27 – 17.78 m/min)			
				GMAW Pulse	RapidArc®		Argon Mix	87	UltimArc®	75	800	ipm	(1.91 – 20.32 m/min)
							Argon Mix	294		75	800	ipm	(1.91 – 20.32 m/min)
	GMAW AC Pulse	Rapid Z®(§)	Argon Mix	474	UltimArc®	70	500	ipm	(1.78 – 12.7 m/min)				
	0.052	GMAW CV	CV (□)	Argon Mix	83	Pinch	50	600	ipm	(1.27 – 15.24 m/min)			
				Argon Mix	84		50	600	ipm	(1.27 – 15.24 m/min)			
				GMAW Pulse	RapidArc® (□)		Argon Mix	88	UltimArc®	60	800	ipm	(1.52 – 20.32 m/min)
							Argon Mix	295		60	650	ipm	(1.52 – 16.51 m/min)
	1/16	GMAW Pulse	Rapid X®(‡,□)	Argon Mix	558	Low Fume Pulse™(‡,□)	60	650	ipm	(1.52 – 16.51 m/min)			
				Argon Mix	85		Pinch	50	450	ipm	(1.27 – 11.43 m/min)		
				Argon Mix	86			50	450	ipm	(1.27 – 11.43 m/min)		
				Argon Mix	89			UltimArc®	60	450	ipm	(1.52 – 11.43 m/min)	
	Argon Mix	296	75	450	ipm	(1.91 – 11.43 m/min)							
Stainless Metal Core EC4XX	0.045	GMAW Pulse	Rapid X®(‡)	Argon Mix	290	UltimArc®	75	800	ipm	(1.91 – 20.32 m/min)			

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Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)		
							ipm	(m/min)	
Aluminum 4XXX	0.035	GMAW CV	CV	Argon	148	Pinch	150 — 750	ipm (3.81 — 19.05 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)	
			Precision Pulse™	Argon	565		125 — 800	ipm (3.18 — 20.32 m/min)	
		GMAW Pulse-on-Pulse®	Pulse-on-Pulse®	Argon	98	Frequency	125 — 800	ipm (3.18 — 20.32 m/min)	
		GMAW AC Pulse	AC Precision Pulse™ (§)	Argon	575	UltimArc®	125 — 700	ipm (3.18 — 17.78 m/min)	
	AC Pulse (§)		Argon	391	125 — 700		ipm (3.18 — 17.78 m/min)		
	3/64	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)	
			Precision Pulse™	Argon	567		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)	
		GMAW AC Pulse	AC Precision Pulse™ (§)	Argon	577	UltimArc®	125 — 500	ipm (3.18 — 12.7 m/min)	
	AC Pulse (§)		Argon	393	100 — 500		ipm (2.54 — 12.7 m/min)		
	1/16	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)	
			Precision Pulse™ (□)	Argon	568		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)	
		GMAW AC Pulse	AC Precision Pulse™ (§, □)	Argon	578	UltimArc®	100 — 350	ipm (2.54 — 8.89 m/min)	
	AC Pulse (§, □)		Argon	394	100 — 400		ipm (2.54 — 10.16 m/min)		
	Aluminum 5XXX	0.035	GMAW CV	CV	Argon	151	Pinch	175 — 750	ipm (4.45 — 19.05 m/min)
			GMAW Pulse	Pulse	Argon	152	UltimArc®	150 — 800	ipm (3.81 — 20.32 m/min)
				CC Pulse	Argon	153		150 — 800	ipm (3.81 — 20.32 m/min)
Precision Pulse™				Argon	570	150 — 800		ipm (3.81 — 20.32 m/min)	
GMAW Pulse-on-Pulse®			Pulse-on-Pulse®	Argon	101	Frequency	140 — 800	ipm (3.56 — 20.32 m/min)	
GMAW AC Pulse			AC Precision Pulse™ (§)	Argon	580	UltimArc®	150 — 800	ipm (3.81 — 20.32 m/min)	
		AC Pulse (§)	Argon	396	125 — 800		ipm (3.18 — 20.32 m/min)		
3/64		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)	
			Precision Pulse™	Argon	572		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)	
		GMAW AC Pulse	AC Precision Pulse™ (§)	Argon	582	UltimArc®	100 — 700	ipm (2.54 — 17.78 m/min)	
AC Pulse (§)			Argon	398	85 — 600		ipm (2.16 — 15.24 m/min)		
1/16		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)	
			Precision Pulse™ (□)	Argon	573		100 — 500	ipm (2.54 — 12.7 m/min)	
		GMAW Pulse-on-Pulse®	Pulse-on-Pulse® (□)	Argon	103	Frequency	75 — 350	ipm (1.91 — 8.89 m/min)	
		GMAW AC Pulse	AC Precision Pulse™ (§, □)	Argon	583	UltimArc®	100 — 400	ipm (2.54 — 10.16 m/min)	
AC Pulse (§, □)			Argon	399	100 — 400		ipm (2.54 — 10.16 m/min)		
SiBr		0.035	GMAW Pulse	Pulse	Argon	192	UltimArc®	80 — 1200	ipm (2.03 — 30.48 m/min)
			GMAW STT®	Synergic STT® (§)	Argon	335	UltimArc®	140 — 450	ipm (3.56 — 11.43 m/min)
		0.040	GMAW STT®	Synergic STT® (§)	Argon	336	UltimArc®	120 — 350	ipm (3.05 — 8.89 m/min)
	GMAW Pulse		Pulse	Argon	191	UltimArc®	50 — 600	ipm (1.27 — 15.24 m/min)	
0.045	GMAW STT®	Synergic STT® (§)	Argon	337	UltimArc®	90 — 300	ipm (2.29 — 7.62 m/min)		
Cu	0.035	GMAW Pulse	Pulse	Argon Helium	198	UltimArc®	100 — 700	ipm (2.54 — 17.78 m/min)	
	0.045	GMAW Pulse	Pulse	Argon Helium	196	UltimArc®	75 — 500	ipm (1.91 — 12.7 m/min)	
NiCr	0.035	GMAW Pulse	Pulse	Ar/ Ar He	501	UltimArc®	75 — 800	ipm (1.91 — 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	503	UltimArc®	75 — 600	ipm (1.91 — 15.24 m/min)	
	1/16	GMAW Pulse	Pulse (□)	Ar/ Ar He	505	UltimArc®	75 — 350	ipm (1.91 — 8.89 m/min)	
NiCu / CuNi	0.035	GMAW Pulse	Pulse	Ar/ Ar He	507	UltimArc®	75 — 800	ipm (1.91 — 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	509	UltimArc®	75 — 600	ipm (1.91 — 15.24 m/min)	
	1/16	GMAW Pulse	Pulse (□)	Ar/ Ar He	511	UltimArc®	50 — 350	ipm (1.27 — 8.89 m/min)	
NiFe- CI	0.035	GMAW Pulse	Pulse	Ar/ Ar He	513	UltimArc®	75 — 800	ipm (1.91 — 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	515	UltimArc®	75 — 600	ipm (1.91 — 15.24 m/min)	
Ni-I	0.035	GMAW Pulse	Pulse	Ar/ Ar He	519	UltimArc®	75 — 800	ipm (1.91 — 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	521	UltimArc®	75 — 600	ipm (1.91 — 15.24 m/min)	
	1/16	GMAW Pulse	Pulse (□)	Ar/ Ar He	523	UltimArc®	50 — 300	ipm (1.27 — 7.62 m/min)	
Ni-CI	0.035	GMAW Pulse	Pulse	Ar/ Ar He	525	UltimArc®	75 — 800	ipm (1.91 — 20.32 m/min)	
	0.045	GMAW Pulse	Pulse	Ar/ Ar He	527	UltimArc®	75 — 500	ipm (1.91 — 12.7 m/min)	

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FCAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	Flux Core	All		FCAW-S	Self Shield CV (~)	NA	6	Pinch	10 — 45
FCAW-G				Gas Shield CV (~)		7	Pinch	10 — 45	V
Cored Wire	0.045		FCAW-G	CV	CO ₂	90	Pinch	175 — 600	ipm (4.45 — 15.24 m/min)
						91		Argon Mix	175 — 600
	0.052		FCAW-G	CV (□)	CO ₂	187	Pinch	150 — 500	ipm (3.81 — 12.7 m/min)
						188		Argon Mix	150 — 500
1/16		FCAW-G	CV (□)	CO ₂	189	Pinch	125 — 400	ipm (3.18 — 10.16 m/min)	
					190		Argon Mix	125 — 400	ipm (3.18 — 10.16 m/min)

SMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA		DCEP SMAW	Soft	NA	1	Arc Force, Hot Start	15 — 555
Crisp					NA	2	Arc Force, Hot Start	15 — 555	A
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	Touch Start TIG	Ar / He	3	Hot Start	5 — 555
Touch Start TIG Pulse					Ar / He	8	Frequency, Background, Hot Start	5 — 555	A
HF TIG (⊖)					Ar / He	375	Hot Start	5 — 450	A
HF TIG Pulse (⊖)					Ar / He	376	Frequency, Background, Hot Start	5 — 450	A
AC GTAW				Touch Start AC TIG (§)	Ar / He	377	AC Frequency, AC Balance, DC Offset, Hot Start	10 — 350	A
				HF Start AC TIG (§)	Ar / He	378	AC Frequency, AC Balance, DC Offset, Hot Start	10 — 350	A

CAG	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	CAG	Arc Gouge (~)	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®, Phase Angle	100 — 1000
Sync Pulse Trail					Argon Mix	401	UltimArc®	100 — 800	ipm (2.54 — 20.32 m/min)
HotWire Pulse Trail					Argon Mix	460		80 — 900	ipm (2.03 — 22.86 m/min)
Sync Pulse Lead					Argon Mix	402	UltimArc®, Phase Angle	150 — 800	ipm (3.81 — 20.32 m/min)
Sync Pulse Trail					Argon Mix	403	UltimArc®	150 — 800	ipm (3.81 — 20.32 m/min)
HotWire Pulse Trail					Argon Mix	461		80 — 800	ipm (2.03 — 20.32 m/min)
0.045			GMAW Tandem (Δ, ~)	Sync Pulse Lead	Argon Mix	404	UltimArc®, Phase Angle	100 — 700	ipm (2.54 — 17.78 m/min)
				Sync Pulse Trail	Argon Mix	405	UltimArc®	100 — 700	ipm (2.54 — 17.78 m/min)
				HotWire Pulse Trail	Argon Mix	462		75 — 800	ipm (1.91 — 20.32 m/min)
0.052			GMAW Tandem (Δ, ~, □)	Sync Pulse Lead	Argon Mix	406	UltimArc®, Phase Angle	100 — 800	ipm (2.54 — 20.32 m/min)
				Sync Pulse Trail	Argon Mix	407	UltimArc®	100 — 800	ipm (2.54 — 20.32 m/min)
				HotWire Pulse Trail	Argon Mix	463		50 — 800	ipm (1.27 — 20.32 m/min)

Weld Set Reference: Z245301
Power Wave® S500/R450/J350 (Imperial units)



§ Advanced Module Required

⊖ External HF Starter Required – Three Phase Input Required

▢ STT® Module Required

Δ Tandem Controller Required

‡ STT® or Advanced Module Required

□ Availability of mode determined by output rating of equipment setup

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

HyperFill® ¹	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	Steel	0.035	GMAW	HyperFill® (□)	Argon Mix	601	UltimArc®	150 — 650 ipm	(3.81 — 16.51 m/min)
HyperFill® STT® (▢)				Argon Mix	651	UltimArc®	100 — 250 ipm	(2.54 — 6.35 m/min)	
0.040		GMAW	HyperFill® (□)	Argon Mix	602	UltimArc®	100 — 500 ipm	(2.54 — 12.7 m/min)	
			HyperFill® STT® (▢)	Argon Mix	653	UltimArc®	75 — 200 ipm	(1.91 — 5.08 m/min)	
Metal Core	0.045	GMAW	HyperFill® (□)	Argon Mix	608	UltimArc®	150 — 415 ipm	(3.81 — 10.54 m/min)	
Cored Wire	0.045	FCAW-G	HyperFill® (□)	CO ₂	617		100 — 500 ipm	(3.81 — 12.7 m/min)	
			HyperFill® (□)	Argon Mix	618	Pinch	100 — 580 ipm	(2.54 — 14.73 m/min)	

GTAW - APEX® ²	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	DCEN GTAW	Touch Start TIG	NA	490	Transition Speed	5 — 500 A	
HF TIG (⊖)				NA	491	Transition Speed	5 — 500 A		
Hotwire AC TIG Square Wave(§)				NA	495	Frequency, Balance	0 — 350 A		

GTAW - LincMaster ³	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	DCEN GTAW	HF TIG pulse	Ar/He	645	Peak Time, Background Time, and Background	5 — 450 A	

PAW - LincMaster ³	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	PAW	Plasma	Ar/He	640		5 — 410 A	
Plasma Pulse				Ar/He	641	Peak Time, Background Time, Background	5 — 410 A		

¹HyperFill® & Process HDT™ Waveform Activation Capability with Power Wave® and PIPEFAB™ Systems

Your purchase of a Lincoln Power Wave or PIPEFAB Welding System comes with (i) a license to use Lincoln Electric standard Power Wave / PIPEFAB waveforms, and (ii) HyperFill & Process HDT waveform capability, which requires a separate license. Without the separate license, the HyperFill and Process HDT waveforms are not available for use on these machines, and only the standard Power Wave / PIPEFAB waveforms are usable.

²APEX® System Required

³LincMaster System Required