

**Weld Set Reference: Z264504 Rapid
Power Wave® R450 Rapid (Imperial units)**



§ Advanced Module Required

Ⓜ STT® Module Required

‡ STT® or Advanced Module Required

Ⓜ AutoDrive® S/SA Required

Ⓞ External HF Starter Required

△ Tandem Controller Required

□ Availability of mode determined by output rating of equipment setup

* AutoDrive® 4RS

~ Three Phase Input Required

Ⓜ R450 Rapid Model Required

* 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)
		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	UltimArc®	60	—	1200
	RapidArc®			Argon Mix	13	60		—	1200	ipm (1.52 — 30.48 m/min)
	Precision Pulse™			Argon Mix	411	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	Pinch	138	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		60	—	1200	ipm (1.52 — 30.48 m/min)
			Precision Pulse™	Argon Mix	412		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	Pinch	20	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	UltimArc®	50	—	800	ipm (1.27 — 20.32 m/min)
			RapidArc®	Argon Mix	18		75	—	800	ipm (1.91 — 20.32 m/min)
			RapidArc® CP (K)	Argon Mix	757		75	—	650	ipm (1.91 — 16.51 m/min)
			Precision Pulse™	Argon Mix	413		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)
		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	Pinch	24	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	UltimArc®	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		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	Pinch	107	50	—	650	ipm (1.27 — 16.51 m/min)	
		GMAW Pulse	Pulse(□)		Argon Mix	108	50	—	500	ipm (1.27 — 12.7 m/min)

GMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)					
	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)
					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)
		GMAW STT®	Synergic STT®(‡)	Argon Mix	364	UltimArc®, Hot Start	100	—	300	ipm	(2.54 — 7.62 m/min)		
				He Ar CO ₂	365		100	—	250	ipm	(2.54 — 6.35 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)		
			GMAW STT®	NonSynergic 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)	
0.040		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)	
				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)	
		GMAW STT®	Synergic STT®(‡)	Argon Mix	284	UltimArc®	100	—	800	ipm	(2.54 — 20.32 m/min)		
				He Ar CO ₂	284		100	—	800	ipm	(2.54 — 20.32 m/min)		
			NonSynergic STT®(‡)	Argon Mix	368	UltimArc®, Hot Start	90	—	200	ipm	(2.29 — 5.08 m/min)		
				He Ar CO ₂	369		90	—	200	ipm	(2.29 — 5.08 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)		
				Constant Penetration (X)	Argon Mix		772	50	—	700	ipm	(1.27 — 17.78 m/min)	
		GMAW Pulse	Pulse	Argon Mix	82	UltimArc®	300	—	650	ipm	(7.62 — 16.51 m/min)		
				RapidArc®	Argon Mix		87	75	—	800	ipm	(1.91 — 20.32 m/min)	
			Rapid X®(‡)	Argon Mix	294	UltimArc® & Magnet Start	75	—	800	ipm	(1.91 — 20.32 m/min)		
				RapidArc® CP (X)	Argon Mix		767	75	—	650	ipm	(1.91 — 16.51 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	Pulse(□)	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)		
				Argon Mix	558		60	—	650	ipm	(1.52 — 16.51 m/min)		
	1/16	GMAW CV	CV(□)	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)		
		GMAW Pulse	Pulse(□)	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)		

	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)				
								Speed	Wire	Travel		
GMAW	Aluminum 4XXX	0.035	GMAW CV	CV	Argon	148	Pinch	150	—	750	ipm	(3.81 — 19.05 m/min)
				Pulse	Argon	149		125	—	800	ipm	(3.18 — 20.32 m/min)
			GMAW Pulse	CC Pulse	Argon	150	UltimArc®	125	—	800	ipm	(3.18 — 20.32 m/min)
				Precision Pulse™	Argon	565		125	—	800	ipm	(3.18 — 20.32 m/min)
			MAW Pulse-on-Puls	Pulse-on-Pulse®	Argon	98	Frequency	125	—	800	ipm	(3.18 — 20.32 m/min)
			GMAW AC Pulse	AC Precision Pulse™(§)	Argon	575		125	—	700	ipm	(3.18 — 17.78 m/min)
			AC Pulse (§)	Argon	391	UltimArc®	125	—	700	ipm	(3.18 — 17.78 m/min)	
		0.040	GMAW Pulse	Precision Pulse™	Argon	566	UltimArc®	125	—	800	ipm	(3.18 — 20.32 m/min)
		3/64	GMAW CV	CV	Argon	71	Pinch	125	—	700	ipm	(3.18 — 17.78 m/min)
				Pulse	Argon	72		85	—	600	ipm	(2.16 — 15.24 m/min)
			GMAW Pulse	CC Pulse	Argon	69	UltimArc®	85	—	600	ipm	(2.16 — 15.24 m/min)
				Precision Pulse™	Argon	567		85	—	600	ipm	(2.16 — 15.24 m/min)
			MAW Pulse-on-Puls	Pulse-on-Pulse®	Argon	99	Frequency	85	—	500	ipm	(2.16 — 12.7 m/min)
			GMAW AC Pulse	AC Precision Pulse™(§)	Argon	577		125	—	500	ipm	(3.18 — 12.7 m/min)
			AC Pulse (§)	Argon	393	UltimArc®	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)
				Pulse (□)	Argon	74		75	—	350	ipm	(1.91 — 8.89 m/min)
			GMAW Pulse	CC Pulse (□)	Argon	79	UltimArc®	75	—	350	ipm	(1.91 — 8.89 m/min)
			Precision Pulse™ (□)	Argon	568		75	—	350	ipm	(1.91 — 8.89 m/min)	
	MAW Pulse-on-Puls		Pulse-on-Pulse® (□)	Argon	100	Frequency	80	—	400	ipm	(2.03 — 10.16 m/min)	
	GMAW AC Pulse		AC Precision Pulse™(§,□)	Argon	578		100	—	350	ipm	(2.54 — 8.89 m/min)	
		AC Pulse (§,□)	Argon	394	UltimArc®	100	—	400	ipm	(2.54 — 10.16 m/min)		
	0.072	GMAW Pulse	AluMax™ (Ψ)	Argon	569	UltimArc®	75	—	250	ipm	(1.91 — 6.35 m/min)	
	Aluminum 5XXX	0.035	GMAW CV	CV	Argon	151	Pinch	175	—	750	ipm	(4.45 — 19.05 m/min)
				Pulse	Argon	152		150	—	800	ipm	(3.81 — 20.32 m/min)
			GMAW Pulse	CC Pulse	Argon	153	UltimArc®	150	—	800	ipm	(3.81 — 20.32 m/min)
				Precision Pulse™	Argon	570		150	—	800	ipm	(3.81 — 20.32 m/min)
			MAW Pulse-on-Puls	Pulse-on-Pulse®	Argon	101	Frequency	140	—	800	ipm	(3.56 — 20.32 m/min)
			GMAW AC Pulse	AC Precision Pulse™(§)	Argon	580		150	—	800	ipm	(3.81 — 20.32 m/min)
			AC Pulse (§)	Argon	396	UltimArc®	125	—	800	ipm	(3.18 — 20.32 m/min)	
		0.040	GMAW Pulse	Precision Pulse™	Argon	571	UltimArc®	150	—	800	ipm	(3.81 — 20.32 m/min)
		3/64	GMAW CV	CV	Argon	75	Pinch	125	—	750	ipm	(3.18 — 19.05 m/min)
				Pulse	Argon	76		85	—	700	ipm	(2.16 — 17.78 m/min)
GMAW Pulse			CC Pulse	Argon	70	UltimArc®	85	—	700	ipm	(2.16 — 17.78 m/min)	
			Precision Pulse™	Argon	572		85	—	700	ipm	(2.16 — 17.78 m/min)	
MAW Pulse-on-Puls			Pulse-on-Pulse®	Argon	102	Frequency	100	—	600	ipm	(2.54 — 15.24 m/min)	
GMAW AC Pulse			AC Precision Pulse™(§)	Argon	582		100	—	700	ipm	(2.54 — 17.78 m/min)	
		AC Pulse (§)	Argon	398	UltimArc®	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)	
			Pulse (□)	Argon	78		100	—	500	ipm	(2.54 — 12.7 m/min)	
		GMAW Pulse	CC Pulse (□)	Argon	80	UltimArc®	100	—	450	ipm	(2.54 — 11.43 m/min)	
		Precision Pulse™ (□)	Argon	573		100	—	500	ipm	(2.54 — 12.7 m/min)		
	MAW Pulse-on-Puls	Pulse-on-Pulse® (□)	Argon	103	Frequency	75	—	350	ipm	(1.91 — 8.89 m/min)		
	GMAW AC Pulse	AC Precision Pulse™(§,□)	Argon	583		100	—	400	ipm	(2.54 — 10.16 m/min)		
	AC Pulse (§,□)	Argon	399	UltimArc®	100	—	400	ipm	(2.54 — 10.16 m/min)			
0.072	GMAW Pulse	AluMax™ (Ψ)	Argon	574	UltimArc®	75	—	350	ipm	(1.91 — 8.89 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		120	—	350	ipm	(3.05 — 8.89 m/min)	
	0.045	GMAW Pulse	Pulse	Argon	191		50	—	600	ipm	(1.27 — 15.24 m/min)	
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)	
	0.035	GMAW Pulse	Pulse	Ar/ Ar He	519	UltimArc®	75	—	800	ipm	(1.91 — 20.32 m/min)	
Ni-I	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)	
	0.035	GMAW Pulse	Pulse	Ar/ Ar He	525	UltimArc®	75	—	800	ipm	(1.91 — 20.32 m/min)	
Ni-CI	0.045	GMAW Pulse	Pulse	Ar/ Ar He	527	UltimArc®	75	—	500	ipm	(1.91 — 12.7 m/min)	
FCAW	Flux Core	All	FCAW-S	Self Shield CV (-)	NA	6	Pinch	10	—	45	V	
			FCAW-G	Gas Shield CV (-)		7	Pinch	10	—	45	V	
	Cored Wire	0.045	FCAW-G	CV	CO ₂	90		175	—	600	ipm	(4.45 — 15.24 m/min)
					Argon Mix	91	Pinch	175	—	600	ipm	(4.45 — 15.24 m/min)
		0.052	FCAW-G	CV (□)	CO ₂	187		150	—	500	ipm	(3.81 — 12.7 m/min)
					Argon Mix	188	Pinch	150	—	500	ipm	(3.81 — 12.7 m/min)
		1/16	FCAW-G	CV (□)	CO ₂	189		125	—	400	ipm	(3.18 — 10.16 m/min)
			Argon Mix	190	Pinch	125	—	400	ipm	(3.18 — 10.16 m/min)		

SMAW	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	DCEN SMAW	Soft		NA	1	Arc Force, Hot Start	15
		Crisp			NA	2	Arc Force, Hot Start	15	— 555 A
		Pipe			NA	4	Arc Force	50	— 250 A
		SMAW DC- (§)			NA	379	Arc Force, Hot Start	15	— 350 A
		AC SMAW		AC SMAW (§)	NA	374	Arc Force, Hot Start	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
Touch Start TIG Pulse					Ar / He	8	Frequency, Background, Hot Start	5	— 555 A
HF TIG (Ø)					Ar / He	375	Hot Start	5	— 450 A
HF TIG Pulse (Ø)					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 Gauge (-)	Compressed Air	9			60

GMAW-Tandem	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	Steel	0.035	SMAW Tandem (Δ, ~)	Sync Pulse Lead		Argon Mix	400	UltimArc®, Phase Angle	100
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)
0.040		SMAW Tandem (Δ, ~)	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		SMAW 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		SMAW 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)

HyperFill ^{®1}	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	Steel	0.035	GMAW	HyperFill [®] (□)		Argon Mix	601	UltimArc®	150
HyperFill [®] RapidArc [®] (□)					Argon Mix	625		100	— 650 ipm (2.54 — 16.51 m/min)
HyperFill [®] STT [®] (Ø)					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 [®] RapidArc [®] (□)		Argon Mix	626		100	— 475 ipm (2.54 — 12.07 m/min)
			HyperFill [®] STT [®] (Ø)		Argon Mix	653	UltimArc®	75	— 200 ipm (1.91 — 5.08 m/min)
0.045	GMAW	HyperFill [®] (□)		Argon Mix	603	UltimArc®	100	— 375 ipm (2.54 — 9.53 m/min)	
		HyperFill [®] STT [®] (Ø)		Argon Mix	660	UltimArc®	100	— 300 ipm (2.54 — 7.62 m/min)	
		HyperFill [®] STT [®] (Ø)		He Ar CO ₂	661	UltimArc®	100	— 300 ipm (2.54 — 7.62 m/min)	
0.040	GMAW	HyperFill [®] RapidArc [®] (□)		Argon Mix	629	UltimArc®	100	— 500 ipm (2.54 — 12.7 m/min)	
		HyperFill [®] STT [®] (Ø)		Argon Mix	662	UltimArc®	100	— 250 ipm (2.54 — 6.35 m/min)	
		HyperFill [®] STT [®] (Ø)		He Ar CO ₂	663	UltimArc®	100	— 200 ipm (2.54 — 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
HF TIG (Ø)					NA	491	Transition Speed	5	— 500 A
AC GTAW			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 ^{®4}	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	PAW	Plasma		Ar/He	640		5
Plasma Pulse					Ar/He	641	Peak Time, Background Time, Background	5	— 410 A

Hot Wire	Type	Size	Procedure	Waveform	Gas Type	Mode #	Arc Control	Max. Range (*)	
	NA	NA	Hot Wire	AC Hotwire	NA	780	Frequency, DC Offset	0	— 4 kW

GMAW	Steel	0.035	GMAW Pulse	RapidArc® 2 (V)	Argon Mix	702	UltimArc®	75	—	1200	ipm	(1.91	—	30.48 m/min)
					90% Ar 10% CO2	1726		75	—	1200	ipm	(1.91	—	30.48 m/min)
					85% Ar 15% CO2	2750		75	—	1200	ipm	(1.91	—	30.48 m/min)
					80% Ar 20% CO2	3774		75	—	1200	ipm	(1.91	—	30.48 m/min)
				Precision Pulse 2™ (V)	Argon Mix	3874	100	—	800	ipm	(2.54	—	20.32 m/min)	
					90% Ar 10% CO2	802	100	—	800	ipm	(2.54	—	20.32 m/min)	
					85% Ar 15% CO2	1826	100	—	800	ipm	(2.54	—	20.32 m/min)	
					80% Ar 20% CO2	2850	100	—	800	ipm	(2.54	—	20.32 m/min)	
				RapidArc® 2 XLS(V)	Argon Mix	689	100	—	800	ipm	(2.54	—	20.32 m/min)	
					Argon Mix	703	75	—	1200	ipm	(1.91	—	30.48 m/min)	
					90% Ar 10% CO2	1727	75	—	1200	ipm	(1.91	—	30.48 m/min)	
					85% Ar 15% CO2	2751	75	—	1200	ipm	(1.91	—	30.48 m/min)	
				80% Ar 20% CO2	3775	75	—	1200	ipm	(1.91	—	30.48 m/min)		
				Precision Pulse 2™ (V)	Argon Mix	3875	75	—	600	ipm	(1.91	—	15.24 m/min)	
					90% Ar 10% CO2	803	75	—	600	ipm	(1.91	—	15.24 m/min)	
					85% Ar 15% CO2	1827	75	—	600	ipm	(1.91	—	15.24 m/min)	
				80% Ar 20% CO2	2851	75	—	600	ipm	(1.91	—	15.24 m/min)		
			RapidArc® 2 XLS(V)	Argon Mix	690	100	—	800	ipm	(2.54	—	20.32 m/min)		
				Argon Mix	704	75	—	800	ipm	(1.91	—	20.32 m/min)		
				90% Ar 10% CO2	1728	75	—	800	ipm	(1.91	—	20.32 m/min)		
				85% Ar 15% CO2	2752	75	—	800	ipm	(1.91	—	20.32 m/min)		
				80% Ar 20% CO2	3776	75	—	800	ipm	(1.91	—	20.32 m/min)		
				Precision Pulse 2™ (V)	Argon Mix	3876	75	—	600	ipm	(1.91	—	15.24 m/min)	
					90% Ar 10% CO2	804	75	—	600	ipm	(1.91	—	15.24 m/min)	
				85% Ar 15% CO2	1828	75	—	600	ipm	(1.91	—	15.24 m/min)		
				80% Ar 20% CO2	3877	75	—	600	ipm	(1.91	—	15.24 m/min)		
			RapidArc® 2 XLS(V)	Argon Mix	690	100	—	800	ipm	(2.54	—	20.32 m/min)		
				Argon Mix	705	75	—	750	ipm	(1.91	—	19.05 m/min)		
				90% Ar 10% CO2	1729	75	—	750	ipm	(1.91	—	19.05 m/min)		
				85% Ar 15% CO2	2753	75	—	750	ipm	(1.91	—	19.05 m/min)		
				80% Ar 20% CO2	3777	75	—	750	ipm	(1.91	—	19.05 m/min)		
				Precision Pulse 2™ (V)	Argon Mix	3877	75	—	500	ipm	(1.91	—	12.7 m/min)	
					92% Ar 10% CO2	4901	75	—	500	ipm	(1.91	—	12.7 m/min)	
					90% Ar 10% CO2	805	75	—	500	ipm	(1.91	—	12.7 m/min)	
					85% Ar 15% CO2	1829	75	—	500	ipm	(1.91	—	12.7 m/min)	
					82% Ar 18% CO2	5925	75	—	500	ipm	(1.91	—	12.7 m/min)	
					80% Ar 20% CO2	2853	75	—	500	ipm	(1.91	—	12.7 m/min)	
	SIB	0.035	GMAW Pulse	RapidArc® 2 (V)	Argon	696	UltimArc®	125	—	500	ipm	(3.18	—	12.7 m/min)
0.040		GMAW Pulse	RapidArc® 2 (V)	Argon	697	UltimArc®	100	—	450	ipm	(2.54	—	11.43 m/min)	
0.045		GMAW Pulse	RapidArc® 2 (V)	Argon	698	UltimArc®	75	—	400	ipm	(1.91	—	10.16 m/min)	

¹ HyperFill® & 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.

² APEX® System Required

³ LincMaster System Required