A compact and motor-driven cam timer, the 324 precisely controls one to twelve load circuits through easily-set screwdriver adjustable cams. Each timer provides a wide range of cycle times through a set of interchangeable gears.

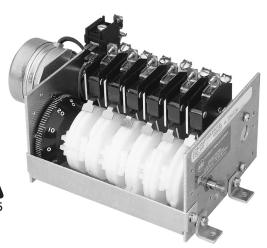
EASY AND PRECISE CAM ADJUSTMENT: With ATC's unique split-cam design, each side of the cam is separately screwdriver-adjustable in either direction: either side determines the precise instant during the cycle when the switch will actuate, the other side determines how long the switch will remain actuated. Adjustments are easy and precise: 1/4 turn of the adjusting screw equals 0.5% of cycle time. A setting disc, calibrated in 1% increments, facilitates program set-up and indicates cycle progress.

ONE TO TWELVE PRECISION SWITCHES: Whether used as a time or sequence programmer, the 324 can be ordered with any number of camoperated switches from one to twelve. Each SPDT precision switch is rated at 10 amps, 120 VAC and is 1/3 hp rated at 120 or 240 VAC.

WIDE RANGE OF CYCLE TIMES: The 324 is available with a variety of synchronous motors. See charts for available timing ranges. Each motor provides an adjustable range of cycle times, with a ratio of over 2.5:1, through a set of interchangeable gears. Changing gears is a simple operation that takes only a few minutes.

ACCURACY: The repeat accuracy and setting accuracy of the 324 are both within \pm 0.25%. Follower fingers precisely track the contour of the cams, accurately operating the precision switches with quick-break action.

SEQUENCE CONTROL: The 324 can be ordered without a motor and with a 1 inch long shaft extension on either or both ends, for use as a rotary cam limit switch.



Precision Switch Cam Programmer

SPECIFICATIONS

CYCLE TIMES	(not field- Choose fro motors and See chart	for available timing ranges.	LOAD SWITCHES	TYPE: CONTACT CONTACT MINIMUM ACTUATIO	ACTION: RATING: CONTACT	switches; one for each cam SPDT (Form C) 10 A at 120 VAC (non-inductive). 1/3 HP at 125/250 VAC 1% of cycle time
REPEAT ACCURACY		of cycle time.	DRIVE MOTORS	SPEED:		choice of 12
SETTING ACCURACY	±0.25% o	of cycle time.		TYPE:		Synchronous; permanently
FRAME SIZES	3, 6, 9 and	d 12 cam frame sizes are provided				lubricated; integral slip clutch for
CAMS	NUMBER:	1 to 12 (or multiples up to 12, by combining timer assemblies); cams				manual advance; anti-backup to prevent damage to switches
		may be factory-set.		VOLTAGE:		120 VAC, 50 or 60 cycles;
	CUT:	Standard or 50% cut, as specified		DOWED		240 VAC, 50 or 60 cycles.
		(standard cams allow contact closure adjustment of 1 to 45% or 55 to 99%	, 0,	POWER CONSUME	TION:	12 watts max
		50% cut cams allow contact closure adjustment of 12 to 52% or 48 to	,	DUAL DRI	VE:	two motors may be used, special applications
		88%; custom cams available with 2 or 4 or cuts.		TORQUE-:		At cycle times of 30 SEC or longer, the 324 can drive and
	CONSTRUC					switch 12 contacts simultaneously; below 30 SEC, the motor may be limited in its ability to drive or
	MECHANICAL CONTACTS:	L: over 10,000,000 operations over 1,000,000 operations at				switch a number of contacts simultaneously.
`	LONIACIS.	less than 1 amp	TEMPERATURE RA	TING	32 to 140	0°F (0 to 60°C)
			WEIGHT			s. for the 3 cam unit up to 2 cam unit
			ENCLOSURES			ase for one model 324 with s. (See Accessories) (Optional)

	MODEL NUMBER	
MODEL NU	IMBER	324C
NUMBER (OF SWITCHES	
	1 Switch , 3 Cams	01
	2 Switches, 3 Cams	02
	3 Switches, 3 Cams	03
	4 Switches, 6 Cams	04
	5 Switches, 6 Cams	05
	6 Switches, 6 Cams	06
	7 Switches, 9 Cams	07
	8 Switches, 9 Cams	08
	9 Switches, 9 Cams	09
	10 Switches, 12 Cams	10
	11 Switches, 12 Cams	11
	12 Switches, 12 Cams	12
CYCLE TIM	E MOTOR SPEED	
	No Motor	0
	5 rpm	Α
	150 rph	В
	4 F b	Е
	15 rph 5 rph	F
	2.5 rph	G G
	1 rph	H
	ТТРП	- 11
	1/6 rph	L
CYCLE TIM	E MOTOR PINION	
	No Motor	0
	24 Teeth (300-495-01-00)	1
	30 Teeth (300-495-02-00)	2
	40 Teeth (300-495-03-00)	3
CYCLE TIM	E CAM SHAFT GEAR	
	No Motor	0
	30 Teeth (300-495-11-00)	Α
	36 Teeth (300-495-12-00)	В
	40 Teeth (300-495-13-00)	C
	45 Teeth (300-495-14-00)	D
	50 Teeth (300-495-17-00)	Е
	55 Teeth (300-495-15-00)	F
	60 Teeth (300-495-16-00)	G
OPERATIO	N	
	Repeat Cycle/Stop Cycle	R
	Dynamic Brake ¹	
	Eternal Drive by user,	Е
	no motor	
	Special	K

	M	^	-	^	DC
-1	٧	u	ш	u	K3

	1 Motor	1
	2 motors	2
	No motor	3
	Special	0
VOLTAGE	& FREQUENCY	
	120/60	Α
	240/60*	В
	120/50	С
	240/50*	D
	No motor	Х
OPTIONS		
	None	01
	1/4" dia. x 1" long shaft extension	02
	right end (Units with one or no motor)	
	1/4" dia. x 1" long shaft extension	03
	left end (Units with one or no motor)	
	1/4" dia. x 1" long shaft extension	04
	both ends (On motorless units only)	
	Special	00
FEATURE:	S	
	Standard (other than cam settings)	Х
	(Blades)	
	Special	K

NOTES

CAMS

Factory setting cams to 0.25% tolerance, 50% cams allow 12 to 52% or 48 to 88% adjustment of switch actuation. 2, 3, or 4 cuts equally spaced. Have limited adjustability. (Does not include 50% cams with multiple cuts) Multiple cuts, unequally spaced. Multiple cuts over 4. Specially cut or specially molded cams.

CONTACT SWITCH

Switch with Bracket

324-260-82-00

¹For Stop Cycle, or Brake operation, specify a 324 with one more switch than you need for your load circuits. (Do not exceed 12 switches total!) You interwire this switch to the motor according to the installation instruction for the unit.

For prices and further information, consult factory.

TIME CYCLE ORDERING CODES

Select Time Cycle from table; if it is available with more than one motor and gearing combination, pick the combination which would best accommodate potential future speed changes. 3 Digit Speed Code identifies motor.

² Be sure to specify shaft extension under OPTIONS

^{* 240} V option limited to availability

TO KPM MOTOR L	for this motor	all slower cycles	5.0	4.8	4.5	4.0	3.6	3.0	One Motor	SFC	Timo Cyclo			all slower cycles	20 40	17.5 35	+	H	+	+	+	+	+	+	3.5 7	ω 6	Motors Motor		(JEC)	Time Cycle				at 50 cycles	speed	SECONDS				at 60 cycles	speed -	SECONDS								
									1 2																	-	-	-				60	55	50	45	40	36	30	ව	2	45	40	36	30	Gear	Shaft	Cam			
High Torque permanent magnet. No brake diode required on stop cycle units									ω		MAXIMUM NUMBER OF CONTACTS SWITCHING TOGETHER	=											+	+	2	-	u	\dashv	Total Number of Contacts	MIMIM		21.6	8.61	18	16.2	14.4	12.96	10.8	100	16.5	13.5	12	10.8	9	40 Tooth	Pinion 3,	Motor		Time	
e require									4 5	Tota	NUMBER	HIS TABLE								+	+	+	+	+	2	_	-1	_	Tota	NIIMBED		A3G	A3F	A3E	A3D	A3C	A3B	A3A	A3G	2 2	A30	A3C	A3B	A3A	m	D	0 6	C		
d on stop									6	Total Number of Contacts	OF CONTA	APPLIES								,	л	2	2	-	-	ı	٥	e la	Total Number of Contacts	DE CONTA		28.8	26.4	24	21.6	19.2	17.28	14.4	24	3 6	18	16	14.4	12	30 Tooth	Pinion 2	Motor		Time	S KPM MOTOL-W
cycle unit		+	+				L	6	7 8	of Contac	CTS SWIT	TO Ø MOT					\vdash		-	+	+	+	-	+	1	1	0	ק לטוומנ	of Contac	CIEC SMITH		A2G	A2F	A2E	A2D	A2C	A2B	A2A	A2G	2 2	A20	A2C	A2B	A2A			0 6	<u> </u>		
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		+	-			9	7 6		+		ETHEN.							\	+	+		+	1	+		1	=	-	בוחבא בוחבא	ETHER		A1G	A1F	A1E	A1D	A1C	A1B	A1A	A16		+		A1B	A1A			0 6	<u> </u>		
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imultan oted ir	n the gr ne 324	itersed	ycle yo		er or co	nat con	elow. F	eousiy	umber	he abil	-		J																			57.6	52.8	_	43.2	\dashv			48 1		t		=		30 Tooth	Pinion	Motor		Time	- 50 KF
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ısly; if not e intersect	there is n ility to tri	of the two	end to us	to the fac	s you no	nds to th	e vertica	erminec	contac	he 324	3	ABILITI			מו שר קי	speed	resulting	MINUTES				at 60 cycl	speed	resulting								72	99	8	54	48	43.2		$^{+}$		t		=	_	24 Too	Pinion	Moto		Time	Ö
ısly; if not, the lir e intersected squ	there is no limit; ility to trip conta	of the two colum	end to use. If th	ceed down the fastest tir	is you need and	nds to the total	e vertical colur	erinined in the	d contacts simu	he 324C to trip		CAPABILITIES	E—SPEED	60		speed 50	resulting 45		36	30	60	at 60 cycles				30	Shaf	Cam							54 B1D	_		36	8 5	g 2	45	40	36	30	24 Tooth E		Motor 0		Time	ė
simultaneously; if not, the limit is noted in the intersected square.	there is no limit ation to ility to trip contacts	intersection of the two columns is	cycle you intend to use. If the	to the factest time	per of contacts you need and pro-	that corresponds to the total num-	below. Pick the vertical column	heously is determined in the chart	number of load contacts simulta-	The ability of the 324C to trip a		ABILITIES	E—SPEED		55	50	45	40	+		+	es 55	5 5	40	36				Motor	Time		B1G	B1F	B1E	B1D	B1C	B1B	36 B1A	60 B1G	50 B1E	45 B1D	40 B1C	36 B1B	30 B1A	m	D	0 6	C		-
	ಕ	of the two columns is	,	ii.	id pro-		e vertical column	ermined in the chart	d contacts simulta-	he 324C to trip a		ABILITIES	E—SPEED	21.6 F3G	55 19.8 F3F	50 18 F3E	45 16.2 F3D	40 14.4 F3C	12 96 F3R	10.8 F34	, i	es 55	45 13.5	40 12	36 10.8 F3B	9 F3A	3, D	Pinion 0	Motor C	Time	5 R	B1G 432	B1F 396	B1E 360	B1D 324	B1C 288	B1B 259.2	36 B1A 216	60 B1G 360	50 BIE 330	45 B1D 2/0	40 B1C 240	36 B1B 216	30 B1A 180	E 40 Tooth	D Pinion 3,	0 6		Time	-
		of the two columns is	,	ii.	id pro-		e vertical column	ermined in the chart	d contacts simulta-	he 324C to trip a		ABILITIES	E—SPEED	21.6 F3G 28.8	55 19.8 F3F 26.4	50 18 F3E 24	45 16.2 F3D 21.6	40 14.4 F3C 19.2	12 96 F3R 17 28	10.8 F34 14.4	18 F3G 24	es 50 15 F3F 22	45 13.5 F3D 18	40 12 F3C 16	36 10.8 F3B 14.4	9 F3A 12	3, D Pinion 2,	Pinion 0 Motor	0		5 RPH Mot	B1G 432 E3G	B1F 396 E3F	B1E 360 E3E	B1D 324 E3D	B1C 288 E3C	B1B 259.2 E3B	36 B1A 216 E3A	60 B1G 360 E3G	50 B1E 300 E3E	45 BID 2/0 E30	40 B1C 240 E3C	36 B1B 216 E3B	30 B1A 180 E3A	E 40 Tooth E	D Pinion 3, D	0 Motor 0		Time	
speed at 50 cycles		8.	,	ime at 60 cycles	resulting	HOURS	e vertical column	art	+			ABILITIES	E—SPEED	21.6 F3G	55 19.8 F3F 26.4 F2F	50 18 F3E 24 F2E	45 16.2 F3D 21.6 F2D	40 14.4 F3C 19.2 F2C	12 96 F3R 17 28 F2R	10.8 F34 14.4 F24	18 F36 24 626	es 50 13 F3E 20 F2E	45 13.5 F3D 18 F2D	40 12 F3C 16 F2C	36 10.8 F3B 14.4	9 F3A 12 F2A	3, D Pinion 2, D	Pinion 0 Motor 0	0	Time	5 RPH Motor -F	B1G 432 E3G 576	B1F 396 E3F 528	B1E 360 E3E 480	B1D 324 E3D 432	B1C 288 E3C 384	B1B 259.2 E3B 345.6	36 B1A 216 E3A 288	60 B1G 360 E3G 480	50 B1E 300 E3E 400	45 B1D 2/0 E3D 360	40 B1C 240 E3C 320	36 B1B 216 E3B 288	30 B1A 180 E3A 240	E 40 Tooth E 30 Tooth	D Pinion 3, D Pinion 2,	0 Motor 0	<u> </u>		
speed	HOURS	s is		at 60 cycles 50	resulting 45	HOURS 40		art	Shaft			ABILITIES	E—SPEED	21.6 F3G 28.8 F2G 36 F1G	55 19.8 F3F 26.4 F2F 33 F1F	50 18 F3E 24 F2E 30 F1E	45 16.2 F3D 21.6 F2D 27 F1D	40 14.4 F3C 19.2 F2C 24 F1C	12 96 F3B 17 28 F2B 21 6 F1B	10.8 E3A 14.4 E2A 18 E1A	18 F3G 24 G2G 30	es 50 15 F3F 20 F2F 2	45 13.5 F3U 18 F2U 22.5	40 12 F3C 16 F2C 20	36 10.8 F3B 14.4 F2B 18 F1B	9 F3A 12 F2A 15 F1A	3, D Pinion 2, D 24 D	Pinion 0 Motor 0 1, 0	C C Pinion C	Time Time	5 RPH Motor-F	B1G 432 E3G 576 E2G	B1F 396 E3F 528 E2F	B1E 360 E3E 480 E2E	B1D 324 E3D 432 E2D	B1C 288 E3C 384 E2C	B1B 259.2 E3B 345.6 E2B	36 B1A 216 E3A 288 E2A	60 B1G 360 E3G 480 E2G	50 B1E 300 E3E 400 E2E	45 B1D 2/0 E3U 360 E2U	40 B1C 240 E3C 320 E2C	36 B1B 216 E3B 288 E2B	30 B1A 180 E3A 240 E2A	E 40 Tooth E 30 Tooth E	D Pinion 3, D Pinion 2, D	0 Motor 0 Motor 0	<u> </u>	Time	3 Nr 11 10001—F
45 8.1 L3D speed 50 9 L3E 45 9.9 L3F 60 10.8 L3F	HOURS 40 7.2 L3C	s is 30 5.4 L3A	55 8.25 L3F	at 60 cycles 50 7.5 L3E	resulting 45 6.75 L3D	HOURS 40 6 L3C	36 5.4 13B	art Gear 40 looting E	Shaft Pinion 3, D F	Cam Motor 0		Time		21.6 F3G 28.8 F2G 36 F1G 43.2	55 19.8 F3F 26.4 F2F 33 F1F 39.6	50 18 F3E 24 F2E 30 F1E 36	45 16.2 F3D 21.6 F2D 27 F1D 32.4	40 14.4 F3C 19.2 F2C 24 F1C 28.8	12 96 F3B 17 28 F2B 21 6 F1B 25 93	10.8 E3A 14.4 E2A 18 E1A 21.6	18 F3G 24 G2G 30 F1G 36	es 50 15 F3E 20 F2E 27 F1E 30	45 13.5 F3D 18 F2D 22.5 F1D 27	40 12 F3C 16 F2C 20 F1C 24	36 10.8 F3B 14.4 F2B 18 F1B 21.6	9 F3A 12 F2A 15 F1A 18	3, D Pinion 2, D 24	Pinion 0 Motor 0 1, 0	C C Pinion	Time	RPH Motor—F	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	
resulting 45 8.1 L3D 10.8 speed 50 9 L3E 12 132 60 10.8 13G 1444	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2,	Cam Motor O Motor	<u>C</u>	Time		21.6 F3G 28.8 F2G 36 F1G 43.2	55 19.8 F3F 26.4 F2F 33 F1F 39.6	50 18 F3E 24 F2E 30 F1E 36	45 16.2 F3D 21.6 F2D 27 F1D 32.4	40 14.4 F3C 19.2 F2C 24 F1C 28.8	12 96 F3B 17 28 F2B 21 6 F1B 25 93	10.8 E3A 14.4 E2A 18 E1A 21.6	18 F3G 24 G2G 30 F1G 36	es 50 15 F3E 20 F2E 27 F1E 30	45 13.5 F3D 18 F2D 22.5 F1D 27	40 12 F3C 16 F2C 20 F1C 24	36 10.8 F3B 14.4 F2B 18 F1B 21.6	9 F3A 12 F2A 15 F1A 18	3, D Pinion 2, D 24 D 3, D	Pinion 0 Motor 0 1, 0 Pinion 0	C C Pinion C Motor C	Time Time Time	RPH Motor—F 2.5	B1G 432 E3G 576 E2G 720	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0	C C	Time	
resulting 45 8.1 L3D 10.8 speed 50 9 L3E 12 132 60 10.8 13G 1444	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2, D	Cam Motor 0 Motor 0	0	Time		21.6 F3G 28.8 F2G 36 F1G 43.2	55 19.8 F3F 26.4 F2F 33 F1F 39.6	50 18 F3E 24 F2E 30 F1E 36	45 16.2 F3D 21.6 F2D 27 F1D 32.4	40 14.4 F3C 19.2 F2C 24 F1C 28.8	12 96 F3B 17 28 F2B 21 6 F1B 25 93	10.8 E3A 14.4 E2A 18 E1A 21.6	18 F3G 24 G2G 30 F1G 36	es 50 15 F3E 20 F2E 27 F1E 30	45 13.5 F3D 18 F2D 22.5 F1D 27	40 12 F3C 16 F2C 20 F1C 24	36 10.8 F3B 14.4 F2B 18 F1B 21.6	9 F3A 12 F2A 15 F1A 18	3, D Pinion 2, D 24 D 3, D 2, D	Pinion 0 Motor 0 1, 0 Pinion 0 Pinion 0	C C Pinion C Motor C Motor C	Time Time Time	RPH Motor—F 2.5	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	
resulting 45 8.1 L3D 10.8 speed 50 9 L3E 12 132 60 10.8 13G 1444	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2,	Cam Motor 0 Motor 0 1,	C C Pinion	Time	1/6 RPH Motor-L	21.6 F3G 28.8 F2G 36 F1G 43.2 G3G 57.6 G2G 72	55 19.8 F3F 26.4 F2F 33 F1F 39.6 G3F 52.8 G2F 66	50 18 F3E 24 F2E 30 F1E 36 G3E 48 G2E 6C	45 16.2 F3D 21.6 F2D 27 F1D 32.4 G3D 43.2 G2D 54	40 14.4 F3C 19.2 F2C 24 F1C 28.8 G3C 38.4 G2C 48	12 96 E3B 17 28 E2B 21 6 E1B 25 92 G3B 34 56 G2B 43	10.8 E3A 14.4 E2A 18 E1A 21.6 G3A 28.8 G2A 36	18 E3G 24 G2G 30 E1G 36 G3G 48 G2G 6G	es 50 15 F3F 27 F2F 27 F1F 33 G3F 44 G2F 5F6	45 13.5 F3U 18 F2U 22.5 F1U 2/ 63U 36 62U 45	40 12 F3C 16 F2C 20 F1C 24 G3C 32 G2C 4C	36 10.8 F3B 14.4 F2B 18 F1B 21.6 G3B 28.8 G2B 36	9 F3A 12 F2A 15 F1A 18 G3A 24 G2A 30	3, D Pinion 2, D 24 D 3, D 2, D 1,	Pinion 0 Motor 0 1, 0 Pinion 0 Pinion 0 Pinion	C C Pinion C Motor C Motor C Mot	Time Time Time	RPH Motor—F	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	
45 8.1 L3D speed 50 9 L3E 45 9.9 L3F 60 10.8 L3F	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2, D 24	Cam Motor 0 Motor 0 1,	C C Pinion	Time	1/6 RPH Motor-L	21.6 F3G 28.8 F2G 36 F1G 43.2 G3G 57.6 G2G 72	55 19.8 F3F 26.4 F2F 33 F1F 39.6 G3F 52.8 G2F 66	50 18 F3E 24 F2E 30 F1E 36 G3E 48 G2E 6C	45 16.2 F3D 21.6 F2D 27 F1D 32.4 G3D 43.2 G2D 54	40 14.4 F3C 19.2 F2C 24 F1C 28.8 G3C 38.4 G2C 48	12 96 E3B 17 28 E2B 21 6 E1B 25 92 G3B 34 56 G2B 43	10.8 E3A 14.4 E2A 18 E1A 21.6 G3A 28.8 G2A 36	18 E3G 24 G2G 30 E1G 36 G3G 48 G2G 6G	es 50 15 F3F 27 F2F 27 F1F 33 G3F 44 G2F 5F6	45 13.5 F3U 18 F2U 22.5 F1U 2/ 63U 36 62U 45	40 12 F3C 16 F2C 20 F1C 24 G3C 32 G2C 4C	36 10.8 F3B 14.4 F2B 18 F1B 21.6 G3B 28.8 G2B 36	9 F3A 12 F2A 15 F1A 18 G3A 24 G2A 30	3, D Pinion 2, D 24 D 3, D 2, D 1,	Pinion 0 Motor 0 1, 0 Pinion 0 Pinion 0 Pinion	C C Pinion C Motor C Motor C Mot	Time Time Time Time Time	RPH Motor—F 2.5	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	
resulting 45 8.1 L3D 10.8 speed 50 9 L3E 12 132 60 10.8 13G 1444	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2, D 24	Cam Motor 0 Motor 0 1,	C C Pinion	Time	1/6 RPH Motor-L	21.6 F3G 28.8 F2G 36 F1G 43.2 G3G 57.6 G2G 72	55 19.8 F3F 26.4 F2F 33 F1F 39.6 G3F 52.8 G2F 66	50 18 F3E 24 F2E 30 F1E 36 G3E 48 G2E 6C	45 16.2 F3D 21.6 F2D 27 F1D 32.4 G3D 43.2 G2D 54	40 14.4 F3C 19.2 F2C 24 F1C 28.8 G3C 38.4 G2C 48	12 96 E3B 17 28 E2B 21 6 E1B 25 92 G3B 34 56 G2B 43	10.8 E3A 14.4 E2A 18 E1A 21.6 G3A 28.8 G2A 36	18 E3G 24 G2G 30 E1G 36 G3G 48 G2G 6G	es 50 15 F3F 27 F2F 27 F1F 33 G3F 44 G2F 5F6	45 13.5 F3U 18 F2U 22.5 F1U 2/ 63U 36 62U 45	40 12 F3C 16 F2C 20 F1C 24 G3C 32 G2C 4C	36 10.8 F3B 14.4 F2B 18 F1B 21.6 G3B 28.8 G2B 36	9 F3A 12 F2A 15 F1A 18 G3A 24 G2A 30	3, D Pinion 2, D 24 D 3, D 2, D 1,	Pinion 0 Motor 0 1, 0 Pinion 0 Pinion 0 Pinion	C C Pinion C Motor C Motor C Mot	Time Time Time Time Time	RPH Motor—F 2.5 RPH Motor—G 1	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	
resulting 45 8.1 L3D 10.8 speed 50 9 L3E 12 132 60 10.8 13G 1444	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2, D 24	Cam Motor 0 Motor 0 1,	C C Pinion	Time	1/6 RPH Motor-L	21.6 F3G 28.8 F2G 36 F1G 43.2 G3G 57.6 G2G 72	55 19.8 F3F 26.4 F2F 33 F1F 39.6 G3F 52.8 G2F 66	50 18 F3E 24 F2E 30 F1E 36 G3E 48 G2E 6C	45 16.2 F3D 21.6 F2D 27 F1D 32.4 G3D 43.2 G2D 54	40 14.4 F3C 19.2 F2C 24 F1C 28.8 G3C 38.4 G2C 48	12 96 E3B 17 28 E2B 21 6 E1B 25 92 G3B 34 56 G2B 43	10.8 E3A 14.4 E2A 18 E1A 21.6 G3A 28.8 G2A 36	18 E3G 24 G2G 30 E1G 36 G3G 48 G2G 6G	es 50 15 F3F 27 F2F 27 F1F 33 G3F 44 G2F 5F6	45 13.5 F3U 18 F2U 22.5 F1U 2/ 63U 36 62U 45	40 12 F3C 16 F2C 20 F1C 24 G3C 32 G2C 4C	36 10.8 F3B 14.4 F2B 18 F1B 21.6 G3B 28.8 G2B 36	9 F3A 12 F2A 15 F1A 18 G3A 24 G2A 30	3, D Pinion 2, D 24 D 3, D 2, D 1,	Pinion 0 Motor 0 1, 0 Pinion 0 Pinion 0 Pinion	C C Pinion C Motor C Motor C Mot	Time Time Time Time Time	RPH Motor—F 2.5 RPH Motor—G 1	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	
resulting 45 8.1 L3D 10.8 speed 50 9 L3E 12 132 60 10.8 13G 1444	HOURS 40 7.2 L3C 9.6	s is 30 5.4 L3A 7.2	55 8.25 L3F 11 60 9 L3G 12	at 60 cycles 50 7.5 L3E 10	resulting 45 6.75 L3D 9	HOURS 40 6 L3C 8	30 4.5 L3A 6	an Gear 40 00th E 30 00	Shaft Pinion 3, D Pinion 2, D 24	Cam Motor 0 Motor 0 1,	C C Pinion	Time	1/6 RPH Motor-L	21.6 F3G 28.8 F2G 36 F1G 43.2 G3G 57.6 G2G 72	55 19.8 F3F 26.4 F2F 33 F1F 39.6 G3F 52.8 G2F 66	50 18 F3E 24 F2E 30 F1E 36 G3E 48 G2E 6C	45 16.2 F3D 21.6 F2D 27 F1D 32.4 G3D 43.2 G2D 54	40 14.4 F3C 19.2 F2C 24 F1C 28.8 G3C 38.4 G2C 48	12 96 E3B 17 28 E2B 21 6 E1B 25 92 G3B 34 56 G2B 43	10.8 E3A 14.4 E2A 18 E1A 21.6 G3A 28.8 G2A 36	18 E3G 24 G2G 30 E1G 36 G3G 48 G2G 6G	es 50 15 F3F 27 F2F 27 F1F 33 G3F 44 G2F 5F6	45 13.5 F3U 18 F2U 22.5 F1U 2/ 63U 36 62U 45	40 12 F3C 16 F2C 20 F1C 24 G3C 32 G2C 4C	36 10.8 F3B 14.4 F2B 18 F1B 21.6 G3B 28.8 G2B 36	9 F3A 12 F2A 15 F1A 18	3, D Pinion 2, D 24 D 3, D 2, D 1,	Pinion 0 Motor 0 1, 0 Pinion 0 Pinion 0 Pinion	C C Pinion C Motor C Motor C Mot	Time Time Time Time Time	RPH Motor—F 2.5	B1G 432 E3G 576 E2G 720 E1	B1F 396 E3F 528 E2F 660	B1E 360 E3E 480 E2E 600	B1D 324 E3D 432 E2D 540	B1C 288 E3C 384 E2C 480	B1B 259.2 E3B 345.6 E2B 432	36 B1A 216 E3A 288 E2A 360	60 B1G 360 E3G 480 E2G 600	50 B1E 300 E3E 400 E2E 500	45 B1D 2/0 E3D 360 E2D 450	40 B1C 240 E3C 320 E2C 400	36 B1B 216 E3B 288 E2B 360	30 B1A 180 E3A 240 E2A 300	E 40 Tooth E 30 Tooth E 24 Tooth	D Pinion 3, D Pinion 2, D Pinion 1,	0 Motor 0 Motor 0 Motor	C C	Time	