

Barnstormers.co.uk TIMING CHARTS FOR "A.J.S." ENGINES

1919-1928

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Ex.	In.
6 h.p., 1919-20 : Front Cylinder	0°	30°	54°	0°	35½°	·008"	·006"
Rear Cylinder	0°	30°	50°	12°	35½°	·008"	·006"
3·49 h.p. Touring S.V., 1921 .	8½°	48°	58°	25°	37°	·008"	·006"
3·49 h.p. Sporting S.V., 1921	21½°	60°	60°	32½°	37°	·008"	·006"
3·49 h.p. Touring S.V., 1922-4	8½°	48°	58°	25°	37°	·008"	·006"
3·49 h.p. Sporting S.V., 1922-4	17½°	60°	53°	27°	42½°	·008"	·006"
7 h.p., 1921-8: Front Cylinder	0°	27°	54½°	0°	34°	·008"	·006"
Rear Cylinder	0°	27°	51°	0°	34°	·008"	·006"
3·49 h.p. O.H.V., 1923-7 . .	15°	58°	50°	25°	47°	·008"	·006"
3·49 h.p. Sporting S.V., 1925-7	15°	58°	50°	25°	37°	·008"	·006"
3·49 h.p. Touring S.V., 1925-7	15°	58°	50°	25°	38°	·008"	·006"
4·98 h.p. O.H.V., 1926-7 . .	10°	33°	51°	5°	37°	·008"	·006"
4·98 h.p. S.V., 1927	15°	58°	50°	25°	38°	·008"	·006"
3·49 h.p. K3 S.V., 1928	20°	48°	48°	35°	34°	·008"	·006"
3·49 h.p. K4 & 5 S.V., 1928 . .	20°	48°	48°	35°	43°	·008"	·006"
3·49 h.p. K6 O.H.V., 1928 . . .	20°	50°	50°	35°	46°	·008"	·006"
3·49 h.p. & 4·98 h.p. K7 & 10 O.H.C., 1928	30°	55°	50°	25°	52°	·018"	·016"
4·98 h.p. K8 O.H.V. & K9 S.V., 1928	20°	51°	61°	12°	37°	·008"	·006"
2·48 h.p. K12 S.V., 1928	17°	44°	41°	27°	39°	·008"	·006"

1929-1930

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Ex.	In.
9·96 h.p. M1 & 2, 1929	20°	51°	58°	13°	35°	·008"	·006"
3·49 h.p. M3 Touring S.V., 1929 .	20°	51°	50°	35°	37°	·008"	·006"
3·49 h.p. M4 & 5, Sporting S.V., 1929	20°	51°	50°	35°	40°	·008"	·006"
3·49 h.p. M6 O.H.V., 1929	20°	51°	50°	35°	45°	·008"	·006"
3·49 h.p. M7 Overhead Camshaft, 1929	30°	55°	50°	25°	53°	·018"	·016"
4·98 h.p. M8 O.H.V., 1929	20°	51°	50°	35°	37°	·008"	·006"
4·98 h.p. M9 Touring S.V., 1929 .	20°	51°	50°	35°	35°	·008"	·006"
4·98 h.p. M10 Overhead Camshaft, 1929	30°	55°	50°	25°	49°	·018"	·016"
2·48 h.p. M12 S.V., 1929	20°	51°	58°	13°	38°	·008"	·006"
9·96 h.p. R2 Touring S.V., 1930 .	20°	51°	58°	13°	35°	·008"	·006"
3·49 h.p. R4 & 5 Touring S.V., 1930	20°	51°	50°	35°	41°	·008"	·006"
3·49 h.p. R6 O.H.V., 1930	20°	51°	50°	35°	46°	·008"	·006"
3·46 h.p. R7 Overhead Camshaft, 1930	20°	55°	68°	25°	50°	·018"	·016"
4·98 h.p. R8 O.H.V., 1930	20°	51°	50°	35°	38°	·008"	·006"
4·98 h.p. R9 S.V. Touring, 1930 . .	20°	51°	50°	35°	39°	·008"	·006"
4·95 h.p. R10 Overhead Camshaft, 1930	20°	55°	68°	25°	47°	·018"	·016"
2·48 h.p. R12 O.H.V., 1930	20°	51°	50°	35°	39°	·008"	·006"
1931							
9·96 h.p. S2 Touring S.V., 1931 . .	20°	51°	58°	13°	35°	·008"	·006"
3·99 h.p. S4 S.V., 1931, & 3·49 h.p. S5 S.V., 1931	20°	51°	50°	35°	41°	·008"	·006"
3·49 h.p. S6 O.H.V., 1931	20°	51°	50°	35°	46°	·008"	·006"
3·49 h.p. S7 Overhead Camshaft, 1931	20°	55°	68°	25°	50°	·018"	·016"
4·98 h.p. S8 O.H.V., 1931	20°	51°	50°	35°	38°	·008"	·006"
4·98 h.p. S9 S.V., 1931	20°	51°	50°	35°	39°	·008"	·006"
4·98 h.p. S10 Overhead Camshaft, 1931	20°	55°	68°	25°	47°	·018"	·016"
2·48 h.p. S12 O.H.V., 1931	20°	51°	50°	35°	39°	·008"	·006"

TIMING CHART FOR ARIEL MOTOR-CYCLES

1931

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. before T.D.C.
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.	
LB31. 250 c.c. S.V.	5°	50°	55°	20°	42°
LF31. 250 c.c. O.H.V.	5°	50°	55°	20°	42°
SB31. 577 c.c. S.V.	5°	50°	55°	20°	38°
SF31. 499 c.c. O.H.V.	5°	55°	60°	20°	40°
SG31. 499 c.c. O.H.V.	22°	70°	70°	25°	40°
VB31. 557 c.c. S.V.	5°	50°	55°	20°	38°
VF31. 497 c.c. O.H.V.	5°	55°	60°	20°	38°
4F31. 497 c.c. O.H.C. 4-cyl.	10°	50°	55°	15°	35-40°

1930

LB. 250 c.c. S.V.	5°	50°	55°	20°	42°
LF. 250 c.c. O.H.V.	5°	50°	55°	20°	42°
E. 500 c.c. O.H.V.	5°	55°	60°	20°	38°
F. 500 c.c. O.H.V.	5°	55°	60°	20°	38°
G. 500 c.c. O.H.V.	22°	70°	70°	25°	42°
A. 550 c.c. S.V.	5°	50°	55°	20°	38°
B. 500 c.c. S.V.	5°	50°	55°	20°	38°

1929

LB. 250 c.c. S.V.	5°	50°	55°	20°	42°
LF. 250 c.c. O.H.V.	5°	50°	55°	20°	42°
E. 500 c.c. O.H.V.	5°	55°	60°	20°	38°
F. 500 c.c. O.H.V.	5°	55°	60°	20°	38°
A. 550 c.c. S.V.	5°	50°	55°	20°	38°
B. 550 c.c. S.V.	5°	50°	55°	20°	38°
Racing cam (for models E. & F only).	22°	70°	70°	25°	42°

1928

A. 550 c.c. S.V.	5°	50°	55°	20°	38°
B. 550 c.c. S.V.	5°	50°	55°	20°	38°
C. 500 c.c. O.H.V.	1-port engine	5°	50°	55°	38°
D. 500 c.c. O.H.V.		5°	50°	55°	38°
E. 500 c.c. O.H.V. 2-port engine		5°	55°	60°	38°
Racing cam (for model E only)		22°	70°	70°	42°

TAPPET CLEARANCES

Correct running clearance for O.H.V. engines is nil when cold.*

Correct running clearance for S.V. engines is .002" inlet, .004" exhaust when cold.

* 4F31 inlet is .002", exhaust is .004".

Barnstaple & Co. LTD. TIMING CHART FOR BLACKBURN ENGINE

1926-1927

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		In.	Ex.
250 c.c. S.V. Std.	10°	54°	52°	20°	40°	·003"	·005"
350 c.c. S.V. Std.	10°	54°	52°	20°	40°	·003"	·005"
500 c.c. S.V. Std.	12°	57°	55°	22°	35°	·003"	·005"
500 c.c. S.V. Sports	16°	57°	60°	24°	38°	·003"	·005"
175 c.c. O.H.V. Std.	14°	56°	54°	21°	45°	·001"	·001"
250 c.c. O.H.V. Std.	14°	56°	54°	21°	45°	·001"	·001"
350 c.c. O.H.V. Std.	14°	56°	54°	21°	45°	·001"	·001"
350 c.c. O.H.V. S.S. (2-port)	18°	58°	62°	27°	45°	·001"	·001"
1,100 c.c. O.H.V. W.C.	16°	58°	52°	24°	45°	·002"	·002"

1928-1931

175 c.c. S.V.	12°	46°	44°	15°	35°	·002"	·005"
200 c.c. S.V.	18°	45°	50°	10°	38°	·002"	·005"
250 c.c. S.V.	15°	50°	40°	20°	38°	·002"	·005"
300 c.c. S.V.	18°	48°	48°	15°	38°	·002"	·005"
350 c.c. S.V.	20°	55°	52°	20°	38°	·002"	·005"
500 c.c. S.V.	10°	66°	55°	20°	35°	·003"	·005"
500 c.c. S.V. Sports	15°	66°	58°	24°	35°	·003"	·006"
600 c.c. S.V.	12°	60°	50°	18°	38°	·003"	·006"
600 c.c. S.V. Sports	16°	62°	55°	24°	45°	·003"	·006"
175 c.c. O.H.V.	16°	50°	50°	18°	45°	·001"	·001"
200 c.c. O.H.V.	16°	50°	50°	18°	45°	·001"	·001"
350 c.c. O.H.V.	14°	62°	55°	21°	43°	·002"	·002"
350 c.c. O.H.V. Sports	22°	70°	60°	33°	43°	·002"	·002"
500 c.c. O.H.V.	14°	63°	50°	21°	45°	·002"	·002"
500 c.c. O.H.V. Sports	24°	70°	62°	36°	45°	·002"	·002"
600 c.c. O.H.V.	12°	57°	54°	18°	48°	·002"	·002"

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet. Inch.	Exhaust. Inch.
2.49 h.p., 1925-9	16° 42°	50° 78°	67° 90°	23° 50°	0	.014 .004	.014 .004
2.49 h.p. O.H.V., 1930 2.49 h.p. S.V., 1930	24°	65°	65°	25°	0	.003 .004	.003 .004
2.49 h.p. O.H.V., 1931	24°	65°	65°	25°	0	.003	.003
3.49 h.p. O.H.V., 1924-6	8°	40°	64°	10°	0	.004	.004
3.49 h.p. S.V., 1923-9	12°	51°	63°	13°	0	.004	.004
3.49 h.p. O.H.V., 1927, and super O.H.V., 1925-7	20°	40°	70°	20°	0 5°	.004	.004
3.49 h.p. S.V., 1930	24°	65°	65°	25°	0	.004	.004
3.49 h.p. O.H.V., 4.93 h.p. S.V., 5.57 h.p. S.V., 4.93 h.p. O.H.V., 1930	24°	65°	60°	20°	0	.003 .004 .004 .003	.003 .004 .004 .003
2.49 h.p. S.V., 3.49 h.p. S.V., 1931	25°	45°	65°	25°	0	.004	.004
4½ h.p., 1915-20	-10°*	50°	53°	16°	0	.004	.004
4½ h.p., 1921-3	-2°*	42°	67°	17°	0	.004	.004

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet. Inch.	Exhaust. Inch.
4.93 and 5.57 h.p., 1924-5	8°	43°	62°	15°	0	.004	.004
4.93 and 5.57 h.p., 1927-9	12° 25°	42° 65°	65° 85°	22° 35°	0	.014 .004	.014 .004
3.49 h.p. O.H.V., 4.93 h.p. O.H.V., 5.57 h.p. De Luxe, 1927-9	24°	65°	60°	20°	0	.004	.004
4.93 h.p. O.H.V., 1929	24°	65°	60°	20°	0	.003	.003
4.93 h.p. S.V. Light, 1930	12° 25°	42° 65°	65° 85°	22° 35°	0	.014 .004	.014 .004
4.93 h.p. O.H.V. Light, 1930	24°	65°	60°	20°	0	.003	.003
4.93 h.p. Dirt Track O.H.V., 1929-30	24°	65°	60°	20°	5°	.004	.004
4.93 h.p. O.H.V., 1931	24°	65°	60°	20°	0	.003	.003
5.57 h.p., 1914-20	-10°*	50°	53°	16°	0	.004	.004
5.57 h.p., 1921-3	-2°*	42°	67°	17°	0	.004	.004
7.70 h.p., 1921-2	10°	50°	55°	15°	0	.004	.004
7.70 and 9.86 h.p., 1923-31	-3°*	40°	60°	14°	0	.004	.004

* NOTE.—These settings are after Top Dead Centre.

Barnstormers.com "J.A.P." Engines 1926-1928

MODELS.	INLET.		EXHAUST.		IGNI- TION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Ex.	In.
175 c.c. S.V. Standard .	5°	45°	65°	15°	35°	·006"	·004"
250 c.c. S.V. Standard .	8°	52°	60°	20°	40°	·006"	·004"
250 c.c. S.V. Sports .	5°	45°	65°	15°	40°	·006"	·004"
250 c.c. O.H. Standard.	8°	52°	60°	20°	40°	·002"	·002"
250 c.c. O.H. Racing .	15°	55°	65°	25°	40°	·002"	·002"
293 c.c. S.V. Standard .	0°	30°	45°	25°	35°	·006"	·004"
300 c.c. S.V. Standard .	8°	52°	60°	20°	35°	·006"	·004"
350 c.c. S.V. Roadster .	8°	52°	60°	20°	35°	·006"	·004"
350 c.c. S.V. Standard .	8°	52°	60°	20°	35°	·006"	·004"
350 c.c. S.V. Sports .	8°	52°	60°	20°	40°	·006"	·004"
350 c.c. O.H. Standard.	8°	52°	60°	20°	40°	·002"	·002"
350 c.c. O.H. Sports .	15°	55°	65°	25°	40°	·002"	·002"
350 c.c. O.H. Racing .	15°	55°	65°	25°	40°	·002"	·002"
500 c.c. S.V. Standard .	15°	60°	62½°	22½°	40°	·006"	·004"
500 c.c. S.V. Sports .	15°	60°	62½°	22½°	40°	·006"	·004"
500 c.c. O.H. Sports .	15°	60°	62½°	22½°	40°	·002"	·002"
500 c.c. O.H. Racing .	15°	60°	62½°	22½°	40°	·002"	·002"
600 c.c. S.V. Standard .	15°	60°	62½°	22½°	35°	·006"	·004"
600 c.c. S.V. Sports .	15°	60°	62½°	22½°	35°	·006"	·004"
4 h.p. S.V. Twin .	0°	30°	50°	20°	38°	·006"	·004"
680 c.c. S.V. Twin .	0°	30°	50°	20°	38°	·006"	·004"
980 c.c. S.V. Twin .	0°	30°	50°	20°	35°	·006"	·004"
980 c.c. S.V. Twin, 1926	10°	50°	60°	20°	40°	·006"	·004"
980 c.c. S.V. Sports Twin	10°	50°	60°	20°	40°	·006"	·004"
8-30 h.p. Sports Twin	15°	60°	62½°	22½°	40°	·006"	·004"
980 c.c. O.H. Sports Twin	15°	60°	62½°	22½°	40°	·002"	·002"
1,100 c.c. O.H.W.C. Twin	15°	60°	62½°	22½°	40°	·002"	·002"

MODELS.		INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
		Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Ex.	In.
175 c.c. S.V., V.	STANDARD	5°	45°	65°	15°	35°	·006"	·004"
200 c.c. S.V., N.		8°	52°	60°	20°	32°	·006"	·004"
250 c.c. S.V., B.		8°	52°	60°	20°	40°	·006"	·004"
250 c.c. O.H.V., P.O. and P.O.Y.		20°	60°	60°	25°	39°	·002"	·002"
300 c.c. S.V., A.		8°	52°	60°	20°	35°	·006"	·004"
350 c.c. S.V., I.Y. and I.Y./M.		8°	52°	60°	20°	35°	·006"	·004"
350 c.c. S.V., I.		8°	52°	60°	20°	35°	·006"	·004"
350 c.c. O.H.V., I.O. and I.O.Y.		24°	55°	60°	20°	40°	·002"	·002"
500 c.c. S.V., K.Y.		15°	60°	62½°	22½°	40°	·006"	·004"
500 c.c. S.V., K.		10°	50°	60°	20°	40°	·006"	·004"
500 c.c. O.H.V., K.O. and K.O.Y.		15°	60°	62½°	22½°	45°	·002"	·002"
550 c.c. S.V., L.Y.		15°	60°	62½°	22½°	40°	·006"	·004"
600 c.c. S.V., U.		10°	50°	60°	20°	35°	·006"	·004"
680 c.c. S.V., G.T.		5°	40°	50°	25°	38°	·006"	·004"
680 c.c. O.H.V., G.T.O.Y.		20°	50°	50°	20°	40°	·002"	·002"
750 c.c. S.V., M.T.		5°	40°	50°	25°	38°	·006"	·004"
980 c.c. S.V., K.T.		10°	50°	60°	20°	40°	·006"	·004"
980 c.c. S.V., K.T.W.		10°	50°	60°	20°	40°	·006"	·004"
1,100 c.c. W./C., L.T.O.W., L.T.O.W./C., L.T.O.W./R.		15°	60°	62½°	22½°	40°	·002"	·002"
350 c.c. O.H.V., S.O.C.	SPORTS	15°	55°	65°	25°	42°	·002"	·002"
500 c.c. O.H.V., K.O.C.		15°	60°	62½°	22½°	44°	·002"	·002"
980 c.c. S.V., K.T.C.		10°	50°	60°	20°	40°	·006"	·004"
8-30 h.p., K.T.C.Y.		15°	60°	62½°	22½°	40°	·006"	·004"
175 c.c. O.H.V., H.O.R.	RACING	20°	60°	60°	30°	35°	·002"	·002"
250 c.c. O.H.V., P.O.R.		24°	55°	62°	25°	48-50°	·002"	·002"
350 c.c. O.H.V., S.O.R.		15°	55°	65°	25°	48-50°	·002"	·002"
350 c.c. O.H.V., I.O.R.		24°	55°	62°	25°	48-50°	·002"	·002"
500 c.c. O.H.V., K.O.R.		15°	60°	62½°	22½°	38-50°	·002"	·002"
500 c.c. O.H.V., J.O.R.		20°	55°	65°	25°	38-50°	·002"	·002"
600 c.c. O.H.V., U.O.R.		15°	60°	62½°	22½°	38-50°	·002"	·002"
750 c.c. O.H.V., E.T.O.R.		15°	60°	62½°	22½°	38-50°	·002"	·002"
8-45 h.p. O.H.V., K.T.O.R.		15°	60°	62½°	22½°	38-50°	·002"	·002"
1,000 c.c. O.H.V., J.T.O. and J.T.O.R.		15°	60°	62½°	22½°	38-50°	·002"	·002"

MODELS.	INLET.		EXHAUST.		IG-NITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Ex.	In.
175 c.c. S.V. Standard . 200 c.c. " " 250 c.c. " " 300 c.c. " " 350 c.c. " " 350 c.c. " "Aza "	12°	55°	50°	15°	35°	.006"	.004"
500 c.c. S.V. Standard . 500 c.c. " Sports . 550 c.c. " Standard . 600 c.c. " " 600 c.c. " Sports .	10°	50°	60°	20°	40°	.006"	.004"
680 c.c. S.V. Standard Twin } 750 c.c. " " "	5°	40°	50°	25°	38°	.006"	.004"
980 c.c. S.V. A./C. and W./C. Twin	10°	50°	60°	20°	40°	.006"	.004"
980 c.c. S.V. 8-30 H.P. Twin .	15°	60°	62°	22°	40°	.006"	.004"
175 c.c. O.H.V. Standard . 200 c.c. " " 250 c.c. " " 300 c.c. " "	20°	60°	60°	25°	39°	.002"	.002"
350 c.c. O.H.V. Standard . 350 c.c. S.V. Sports . 400 c.c. " "	24°	55°	60°	30°	40°	.002"	.002"
500 c.c. O.H.V. Standard . 600 c.c. " "	15°	55°	60°	22°	45°	.002"	.002"
500 c.c. O.H.V. Standard Twin } 680 c.c. " " "	20°	50°	50°	20°	40°	.002"	.002"
1,000 c.c. O.H.V. Standard Twin } 1,100 c.c. " " "	22°	60°	60°	20°	40°	.002"	.002"
175 c.c. O.H.V. Racing .	20°	60°	60°	30°	35°	.002"	.002"
250 c.c. O.H.V. Racing . 350 c.c. " "	24°	55°	62°	25°	40-48°	.002"	.002"
500 c.c. O.H.V. Racing . 600 c.c. " "	22°	60°	60°	20°	38-50°	.002"	.002"
500 c.c. O.H.V. Racing Twin .	24°	55°	62°	25°	42-50°	.002"	.002"
750 c.c. O.H.V. Racing Twin } 1,000 c.c. " " 1,100 c.c. " SportsW./C. Twin }	22°	60°	60°	20°	38-50°	.002"	.002"

Barnstormers' TIMING CHART FOR

MATCHLESS MOTOR-CYCLES

PARTICULARS OF MODELS

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		
R—1927, RS—1928 R3—1929, RS—1929 R6—1930	15°	52°	58°	14°	40°	·01"
R4—1930, R7—1931	14°	57°	53°	15°	40°	·01"
DS—1931 D—1931	20°	67°	75°	28°	37°	·007"
T2—1927, T—1927 T3—1928 T4—1928 T3—1929 T5—1930 TS—1928-29 TS2—1930	18°	55°	60°	16°	37°	·007"
LR—1927 LR2—1928	20°	68°	68°	25°	40°	·007"
V—1927 V2—1928 V2—1929 V3—1930	23°	64°	74°	22°	40°	·007"
V2S—1928 V2S—1929 V3S—1930	20°	64°	66°	21°	40°	·007"
CS—1931 C—1931	20°	67°	75°	28°	40°	·007"
V5—1929 V6—1930	10½°	46°	52°	10½°	35°	·007"
A—1930 A2—1931	10°	55°	60°	10°	35°	·008"
B—1931	20°	65°	65°	25°	48°	·008"
M3—1927 M3—1928 M3S—1927 M3S—1928	15°	52½°	57½°	12½°	38½°	·01"
X—1929 XR—1929 X2—1930 XR2—1930 X3—1931 XR3—1931	11°	46°	52°	10°	38½°	·01"
M—1927 M—1928	10½°	46°	52°	10½°	40°	·01"

MODELS.	YEARS.	CYLS.	BORE.	STROKE.	C.C.	V.
R RS R4 R7	1927 1928 1929 1930 1931	1	62·5	80	246	S.S.
R3 R6 DS	1929 1930 1931	1	62·5	80	246	O.H.V.
T4 T2 D	1928 1929 1927 1931	1	69	93	347	S.S.
TS	1928-29	1	69	93	347	O.H.V.
TS2	1930	1	69	93	347	O.H.V.

MODELS.	YEARS.	CYLS.	BORE.	STROKE.	C.C.	V.
LR LR2	1927 1928	1	69	93	347	O.H.C.
V V2 V3 CS	1927 1928 1929 1930 1931	1	85·5	85·5	495	O.H.V.
V5 V6 C	1929 1930 1931	1	85·5	101·6	586	S.S.
T T3 T5	1927 1928 1929 1930	1	82·5	93	498	S.S.

MODELS.	YEARS.	CYLS.	BORE.	STROKE.	C.C.	V.
M	1927 1928	1	89	95	591	O.H.V.
M3 and M3S X—XR X2, XR2 X3, XR3	1927-8 1929 1930 1931	2	85·5	85·5	990	S.S.
A A2	1930 1931	2	54	86	397	S.S.
B	1931	4	50·8	73·02	593	O.H.C.

TIMING CHART FOR "P. & M." ENGINES

MODELS.	INLET.		EXHAUST.		IGNI- TION. MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet.	Ex- haust.
500 c.c. and 600 c.c. 1924-31	10°	45°	65°	15°	47°	·002"	·003"
500 c.c. T.T. Panther 1926-28	10°	45°	65°	15°	47°	·002"	·003"
4½ h.p. 1922-23	—5°*	32°	55°	5°	30°	·002"	·003"
4½ h.p. 1920-21	—11°*	26°	50°	11°	30°	·002"	·003"

* After T.D.C.

TIMING CHART FOR DOUGLAS ENGINES, 1926-1931

MODELS.	INLET.		EXHAUST.		IGNITION. MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet.	Ex- haust.
Y.E., E.H., E.R., E.N., E.V. (S.V.)	15°	50°	50°	15°	40°-50°	·006"	·006"
E.Q. (S.V.)	5°	45°	60°	20°	34°-37°	·006"	·006"
O.E., E.D. (O.H.V.) . .	10°	45°	50°	17°	35°-40°	·002"	·002"
E.L. (O.H.V.)	10°	50°	63°	20°	45°-50°	·002"	·002"
E.U., E.T. (O.H.V.) . .	10°	50°	63°	20°	38°-40°	·002"	·002"

TIMING CHART FOR NEW IMPERIAL ENGINES

MODELS.	INLET.		EXHAUST.		IGNI- TION. MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet.	Ex- haust.
500 c.c. O.H.V., 1928-31 .	15°	45°	60°	20°	12°	nil when	nil cold
500 c.c. S.V., 1928-31. .	10°	45°	60°	20°	8°	·005"	·005"
350 c.c. O.H.V., 1927-31 .	15°	45°	60°	20°	12°	nil	nil
350 c.c. S.V., 1926-31. .	10°	45°	60°	20°	8°	·005"	·005"

BARNSTON ENGINE CHART FOR NORTON ENGINES

1924

MODELS.	INLET.		EXHAUST.		IGNITION. MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Ex.	In.
Big 4 S.V.	20°-25°	50°-55°	55°-60°	20°-25°	20°-25°	·005"	·003"
3½ h.p. S.V.	20°-25°	50°-55°	55°-60°	20°-25°	20°-25°	·005"	·003"

1925

Big 4 S.V.	20°-25°	50°-55°	55°-60°	20°-25°	20°-25°	·005"	·003"
3½ h.p. S.V.	20°-25°	50°-55°	60°-65°	20°-25°	20°-25°	·005"	·003"

1926

490 c.c. O.H.V.	25°-30°	40°-45°	55°-60°	25°-30°	35°-40°	·003"	·003"
490 c.c. S.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·005"	·003"
Big 4 S.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·005"	·003"
588 c.c. O.H.V.	25°-30°	40°-45°	55°-60°	25°-30°	35°-40°	·003"	·003"

1927

490 c.c. O.H.V.	25°-30°	40°-45°	55°-60°	25°-30°	35°-40°	·003"	·003"
490 c.c. S.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·005"	·003"
Big 4 S.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·005"	·003"
588 c.c. O.H.V.	25°-30°	40°-45°	55°-60°	25°-30°	35°-40°	·003"	·003"

1928 and 1929

490 c.c. O.H.V.	25°-30°	40°-45°	55°-60°	25°-30°	35°-40°	·003"	·003"
490 c.c. S.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·005"	·003"
Big 4 S.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·005"	·003"
588 O.H.V.	25°-30°	40°-45°	55°-60°	25°-30°	20°-25°	·003"	·003"
490 c.c. O.H.C.	35°	—	—	40°	—	·010"	·006"

1930

490 c.c. O.H.C., CS 1	35°	—	—	40°	50°-55°	·010"	·006"
348 c.c. O.H.C., CJ	35°	—	—	40°	50°	·010"	·006"
348 c.c. O.H.V., JE	35°	—	—	40°	42°	·004"	·002"
490 c.c. O.H.V., 490 c.c. S.V., Big 4	As for 1928 and 1929.						

1931

490 c.c. O.H.V. (Models 18, 20, ES. II)	25°-30°	43°-48°	60°-65°	25°-30°	42°	·004"	·002"
490 c.c. S.V. (Model 16 H)	25°-30°	43°-48°	60°-65°	25°-30°	25°	·006"	·004"
Big 4 S.V. (Model 1)	25°-30°	43°-48°	60°-65°	25°-30°	20°	·006"	·004"
588 c.c. O.H.V. (Model 19)	25°-30°	43°-48°	60°-65°	25°-30°	42°	·004"	·002"
490 c.c. O.H.C. (Model CS 1)	35°	—	—	40°	50°	·010"	·006"
348 c.c. O.H.C. (Model CJ)	35°	—	—	40°	50°	·010"	·006"
348 c.c. O.H.V. Model JE)	25°-30°	43°-48°	60°-65°	25°-30°	42°	·004"	·002"

BARNSTORMING CHART FOR "RALEIGH" MOTOR-CYCLES

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet.	Exhaust.
2 $\frac{3}{4}$ h.p. Light Weight. Prior to 1925	0°	40°	55°	12°	35°	·004"	·006"
3·48 h.p. S.V., 1925-9.	5°	50°	60°	20°	35°	·004"	·006"
3·48 h.p. O.H.V. T.T. Replica	15°	60°	65°	30°	38°	·003"	·003"
7·98 h.p. S.V. Vee Twin	0°	40°	55°	12°	35°	·004"	·006"
198 c.c. S.V., 1930-1 .	0°	40°	55°	12°	30°	·004"	·006"
248 c.c. S.V., 1930-1 .	0°	40°	55°	12°	25°	·004"	·006"

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet.	Exhaust.
298 c.c. S.V., 1930-1 .	0°	40°	55°	12°	25°	·004"	·006"
348 c.c. S.V., 1930-1 .	15°	60°	50°	23°	30°	·004"	·006"
496 c.c. S.V., 1930-1 .	15°	60°	50°	23°	30°	·004"	·006"
598 c.c. S.V., 1930-1 .	15°	60°	50°	23°	30°	·004"	·006"
348 c.c. O.H.V., 1930-1	15°	60°	50°	23°	38°	·003"	·003"
496 c.c. O.H.V., 1930-1	15°	60°	50°	23°	35°	·003"	·003"
598 c.c. O.H.V., 1930-1	15°	60°	50°	23°	32°	·003"	·003"

TIMING CHART FOR "RUDGE" MOTOR-CYCLES

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clear- ance when Timing.
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		
500 c.c., Four Valve, 1924-6	—8°*	37°	50°	10°	35-39°	·01"
350 c.c., 1924-5	—8°*	36°	50°	10°	35°	·01"
500 c.c., 1927	—8°*	49°	54°	10°	35-39°	·01"
Special Models, 1928-31, and 1928 Sports, 1929-31	5°	41°	54°	17°	39-42°	·02"

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clear- ance when Timing.
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		
350 c.c., 1929-30	21°	25°	70°	1°	39-42°	·017"
350 c.c., 1931.	5°	41°	54°	17°	39-42°	·017"
"Ulster" Models : 1929-30	36°	56°	56°	36°	45-48°	·02"
1931	30°	50°	58°	30°		
250 c.c., 1931	5°	41°	54°	17°	41-44°	·015"

* These settings are after T.D.C.

When the timing operations are completed, the tappets should be adjusted until there is only just perceptible clearance between the overhead rockers and the valve stems with the engine cold.

TIMING CHART FOR "ROYAL ENFIELD" ENGINES

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. before T.D.C.
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.	
Z50. 225 c.c. S.V., 1928-9	10°	50°	65°	25°	33°
B30. 225 c.c. S.V., 1930	10°	50°	65°	25°	33°
350. 346 c.c. S.V., 1927-9	0°	65°	40°	30°	32°
C30. 346 c.c. S.V., 1930	5°	75°	55°	30°	32°
F30. 346 c.c. S.V. Dry Sump, 1930	20°	80°	60°	55°	32°
C31. 346 c.c. S.V., 1931	5°	75°	55°	30°	32°
F31. 346 c.c. S.V. Dry Sump, 1931	20°	80°	60°	55°	32°
351. 346 c.c. O.H.V., 1927-8	0°	65°	40°	30°	38°
351. 346 c.c. O.H.V., 1928-9	22°	60°	60°	22°	38°
355. 346 c.c. O.H.V., 1928-9	22°	60°	60°	22°	38°
CO30, 31. 346 c.c. O.H.V., 1930-1	22°	60°	60°	22°	38°
CS31. 346 c.c. O.H.V., 1931	22°	60°	60°	22°	38°
G30. 346 c.c. O.H.V. Dry Sump, early 1930	35°	75°	75°	35°	38°
G30. 346 c.c. O.H.V. Dry Sump, late 1930	35°	85°	65°	55°	38°
G31. 346 c.c. O.H.V. Dry Sump, 1931	35°	85°	65°	55°	38°
500. 488 c.c. S.V., 1927-8	0°	65°	40°	30°	35°
501. 488 c.c. S.V., 1929	5°	75°	55°	30°	35°
502. 488 c.c. S.V., 1929	5°	75°	55°	30°	35°
D30. 488 c.c. S.V., 1930	5°	75°	55°	30°	35°
H30. 488 c.c. S.V. Dry Sump, 1930	20°	80°	60°	55°	35°
HA31. 488 c.c. S.V. Dry Sump, 1931	20°	80°	60°	55°	35°
H31. 570 c.c. S.V. Dry Sump, 1931	15°	80°	55°	40°	33°
505. 488 c.c. O.H.V., 1929	30°	65°	65°	30°	40°
E30. 488 c.c. O.H.V., 1930	30°	65°	65°	30°	40°
J30. 488 c.c. O.H.V. Dry Sump, 1930	35°	85°	65°	55°	40°
JA31. 488 c.c. O.H.V. Dry Sump, 1931	35°	85°	65°	55°	40°
JF31. 488 c.c. 4-valve Dry Sump, 1931	40°	70°	70°	40°	40°
J31. 499 c.c. O.H.V. Dry Sump, 1931	40°	80°	80°	40°	38°
180. 976 c.c. Twin, 1927-9	0°	45°	60°	15°	35°
182. 976 c.c. Twin, 1927-9	0°	45°	60°	15°	35°
K30. 976 c.c. Twin, 1930	0°	45°	60°	15°	35°
K31. 976 c.c. Twin, 1931	0°	70°	60°	30°	35°

TAPPET CLEARANCES

Valve Timings are given at .005" clearance.

Correct Running Clearance for O.H.V. engines is zero when cold.

Correct Running Clearance for S.V. engines is .004" inlet, .006" exhaust when cold.

TIMING CHART FOR

"SUNBEAM" ENGINES

1931

MODELS.	INLET.		EXHAUST.		IGNITION MAX. ADV. Before T.D.C.	Tappet Clearance.	
	Opens before T.D.C.	Closes after B.D.C.	Opens before B.D.C.	Closes after T.D.C.		Inlet.	Exhaust.
Lion	0°	60°	60°	17°	35°	·004"	·006"
No. 10	30°	60°	60°	30°	35°	·002"	·008"
No. 90	30°	60°	60°	30°	44°	·002"	·012"
No. 9	30°	60°	60°	30°	41°	·002"	·012"

1930

No. 80	30°	60°	60°	30°	45°	·002"	·012"
No. 90	30°	60°	60°	30°	44°	·002"	·012"
Lion	0°	60°	60°	17°	35°	·004"	·006"
No. 9	30°	60°	60°	30°	41°	·002"	·012"
No. 8	30°	60°	60°	30°	43°	·002"	·012"
Nos. 5-6	0°	60°	60°	17°	35°	·004"	·006"
Nos. 1-2	0°	60°	60°	17°	35°	·004"	·006"

1929

No. 80	30°	60°	60°	30°	45°	·002"	·012"
No. 8	30°	60°	60°	30°	43°	·002"	·012"
Nos. 5-6	0°	60°	60°	17°	35°	·004"	·006"
No. 9	30°	60°	60°	30°	41°	·002"	·012"
No. 90	30°	60°	60°	30°	44°	·002"	·012"
Nos. 1-2	0°	60°	60°	17°	35°	·004"	·006"
No. 7	0°	45°	50°	15°	30°	·004"	·006"

1928

No. 7	0°	45°	50°	15°	30°	·004"	·006"
No. 8	12°	52°	55°	20°	43°	·002"	·012"
No. 9	15°	55°	55°	20°	41°	·002"	·012"
No. 90	30°	60°	60°	30°	44°	·002"	·012"
Nos. 5-6	0°	60°	60°	17°	35°	·004"	·006"
Nos. 1-2	0°	60°	60°	17°	35°	·004"	·006"

1927

No. 90	15°	55°	55°	20°	44°	·002"	·012"
Nos. 5-6	0°	60°	60°	17°	35°	·004"	·006"
No. 9	15°	55°	55°	20°	41°	·002"	·012"
Nos. 1-2	0°	60°	60°	17°	35°	·004"	·006"
No. 80	12°	52°	55°	20°	45°	·002"	·012"