

8/1/66

Exhaust Valve W. 47912 248cc OHV

Order of preference for alternative steels :-

K.E.965

EN 54A equivalent to KE965

21-4N better class but slightly more expensive

EN 54

12-1-66

First 500 c'breakers on American Interceptors
had 72° closed period on cam.

Future orders will have 160° closed period on cam

Bottom of Crankcase $1/16''$ lower

Breather with oil trap, Rotor or Spiral baffle?

Oil Filler & dipstick

T/Side Camshaft bearings in detachable housings

Built in rev-counter drive on drive side.

More clearance for final drive sprocket. (up to 24T)

Re-shape top and front face of gearbox.

Move cams out $1/16''$ each

New front engine plates.

Oil Feed filter with inner tube (Steel Body with American size Hex)

~~Cast-in pipe in Timing Cover to lead cable of breaker out at rear.~~

$3/8''$ dia plunger in oil pump.

back & front connected = 3-2 pints/min or 24 galls/hour at 6000 R.P.M.

Re-shape top of Gearbox & bolting up face

Re-shape top of gearbox bracket

60 lb release valve as 175 OHC

10 lb " " as 175 OHC but $7/16$ CSI & shorter.

New rocker feed oil pipe

New Oil Cleaner Cap.

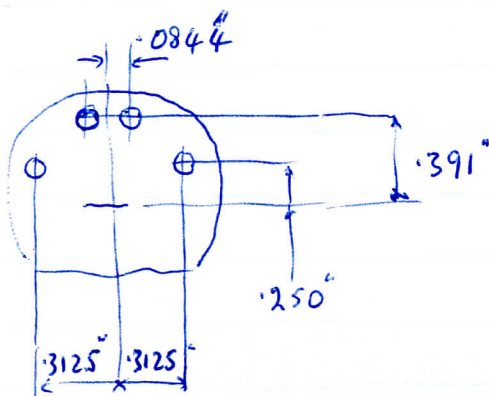
No screens needed for plugging access holes to top crankcase screws.

Use Allen screws for Tacho Drive S/Box

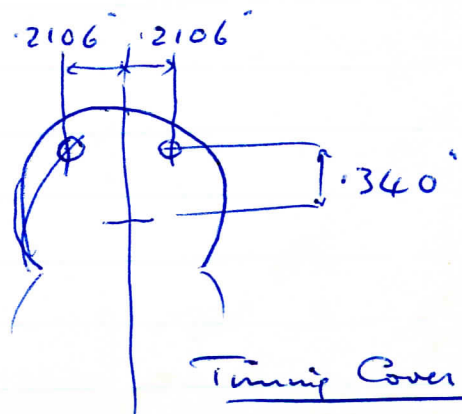
Top Caps of Push Rods need chamfer if high lift cams are used.

Oil seal instead of feed plug into engine mainshaft?

~~Req camshaft bushes to prevent turning?~~



Pump Disc



Timing Cover

All holes .136" DIA

Comps
Camshaft Bushes - D/S Plain Slaves? (headless)

No bush on T/Side

Oil grooves in camshafts, not in bushes

Increase bearing size on Sprocket end?

Sprocket parallel fit against shoulder?

Depth of oil pump disc $219/32$ to allow clearance over top for oil.

Clean up oil pump cover.

Cut gear on pump spindle without longitudinal movement.

Rubber on plastic grommet for a breaker cable exit from timing cover.

New oil pump worn with extension into seal in timing cover.

Pump spindle locating plate $.095$ thick (13swg)
 $.089$

Move filler screw on Punison, chaincase to line up with timing mark on alternator rotor

6 piston rings (2nd groove) MTP 20883 (spec H922 matl)
to replace TP 17355

ordered 18-10-66 D. Smallwood. Hepworth & Grandage,
(Victoria 7718) 516 Stratford Road,
Sparkhill
Bham 11.

B.S.A. Heat Sink

Mr Ken Wyatt (Chief Buyer BSA Group)
Small Heath.

Mr Blew Service Dept Amory Road

DESIGN HEAT SINK TO REPLACE B.S.A. TYPE

READY FOR ~~NOV~~ SEPT 1967

TRY WIPAC FOR AIR FILTERS

TAPPET ~~CAM~~ READINGS

12-9-66

750cc INTERCEPTOR ENGINE WITH HIGH LIFT "DELONG" CAMSHAFTS
AND INLET SPROCKET W. 36140.

EXHAUST TIMING CORRECT, INLET TIMING 3° LATE.

INLET

250	0	325	24	40	274.5	115	399	190	269	265	2
255	.5	330	31.5	45	290	120	398.5	195	252	270	19
260	1.5	335	41.5	50	305	125	397	200	234	275	16
265	2	340	54	55	319	130	394	205	215	280	14
270	3	345	69	60	332	135	390	210	196	285	12
275	4	350	84	65	343	140	385	215	177	290	11
280	5.5	355	102	70	356	145	378	220	157	295	11
285	6.5	360	121	75	365	150	370	225	138	300	9
290	7.5	365	142	80	373	155	360	230	118	305	8
295	8.5	370	162	85	380	160	349	235	100	310	7
300	9.5	375	182	90	386	165	338	240	83	315	6
305	11	380	201.5	95	391	170	327	245	67	320	4
310	12.5	385	220.5	100	394.5	175	315	250	52.5	325	3
315	15	390	238.5	105	397	180	300	255	40	330	2
320	18.5	395	256.5	110	398.5	185	285	260	31	335	1
										340	0

EXHAUST

15	0	90	14	165	238	240	400	315	301	30	42
20	.5	95	18	170	256	245	401.5	320	286	35	32
25	1	100	23	175	273	250	402	325	271	40	25
30	1	105	30	180	289	255	402	330	253.5	45	20
35	2	110	40	185	304	260	401	335	235	50	17
40	2.5	115	52.5	190	319	265	397	340	218	55	15
45	3	120	67	195	333	270	393	345	197	60	13
50	4	125	84	200	344	275	388	350	177	65	12
55	5	130	102	205	355	280	381	355	158	70	11
60	6	135	122	210	365	285	373	360	139	75	10
65	7	140	141	215	374	290	362.5	5	120	80	8.5
70	8	145	161	220	382	295	352.5	10	101	85	7.5

VALVE LIFT READINGS

750cc INTERCEPTOR ENGINE WITH HIGH LIFT "DE LONG" CAMSHAFTS
AND INLET SPROCKET W. 36140

EXHAUST TIMING CORRECT, INLET TIMING 3° LATE

INLET

248	0	315	13.5	25	209	95	383	165	331	235	88	305	7
250	.5	320	17	30	227	100	387	170	317	240	72	310	6
255	1	325	22	35	245	105	390	175	303	245	57	315	5
260	1.5	330	29	40	262	110	391	180	288	250	45	320	4
265	2	335	38	45	279	115	392	185	272	255	35	325	3
270	3	340	50	50	293	120	392	190	255	260	26	330	2.5
275	4	345	64.5	55	307	125	391	195	238	265	21	335	2
280	5	350	79	60	320	130	388	200	220	270	17	340	1
285	6	355	95	65	333	135	383	205	201	275	14	345	.5
290	6.5	360	114	70	343	140	377	200	182	280	12	350	0
295	7	5	133	75	354	145	370	215	163	285	11		
300	8	10	152	80	363	150	362	220	145	290	10		
305	10	15	172	85	370	155	353	225	125	295	9		
310	11.5	20	191	90	377	160	342	230	105	300	8		

EXHAUST

40	0	115	46	190	311	265	387	340	210	55	13
45	.5	120	60	195	324	270	383	345	191	60	11
50	1.5	125	76	200	336	275	377	350	171	65	10
55	2.5	130	93	205	347	280	370	355	153	70	8.5
60	3.5	135	112	210	357	285	362	360	134	75	7.5
65	4.5	140	131	215	365	290	353	5	116	80	6.5
70	5.5	145	151	220	373	295	343	10	98	85	5
75	6.5	150	171	225	379	300	332	15	80	90	4
80	8	155	190	230	385	305	320	20	66	95	3
85	9.5	160	210	235	388	310	307	25	51	100	2
90	11.5	165	228	240	391	315	293	30	40	105	1
95	14	170	247	245	392	320	278	35	30	110	0
100	19	175	264	250	392	325	262	40	23		

OIL FLOW TEST ON PUMP

21-10-66

Oil pump assembled in Timing Cover and driven on drilling machine
3/8" dia pump plunger, 1/2" stroke, primary and secondary connected
together.

Release valve set at 60 lbs / sq in.

<u>Pump Speed</u>	<u>Flow</u>	<u>Equivalent engine speed</u>
150 R.P.M.	250 cc / min	900
590 R.P.M.	750 cc / min	3,540
1000 R.P.M.	700 cc / min	6,000
1500 R.P.M.	630 cc / min	9,000

Small diameter ball valve restricting flow (release valve set at
60 lbs / sq in, gauge was reading 80 lbs / sq in)

1000 R.P.M. 780 cc / min 6,000
(without ball valve)
= 1.4 pints / min

9-11-66

TAPPET READINGS

750cc INTERCEPTOR ENGINE WITH LOW-LIFT "DELONG" CAMSHAFTS
AND INLET SPROCKET W. 42507

EXHAUST TIMING 6° EARLY, INLET TIMING CORRECT

INLET

240	0	315	20	30	239	105	341	180	261	255	30	330	.5
245	.5	320	26	35	253	110	341	185	248	260	23	335	0
250	1	325	33	40	266	115	341	190	234	265	18		
255	2	330	44	45	278	120	341	195	219	270	15		
260	3	335	58	50	290	125	340	200	204	275	13		
265	3	340	73	55	298	130	338	205	188	280	11		
270	4	345	90	60	307	135	335	210	172	285	10		
275	5	350	108	65	315	140	330	215	154	290	9		
280	6	355	125	70	321	145	325	220	136	295	8		
285	7	360	143	75	327	150	320	225	118	300	7		
290	8	5	161	80	332	155	313	230	100	305	6		
295	9	10	177	85	335	160	304	235	84	310	5		
300	10.5	15	194	90	338	165	295	240	68	315	3.5		
305	12.5	20	210	95	340	170	285	245	54	320	2		
310	15	25	225	100	341	175	273	250	40	325	1		

EXHAUST

20	0	100	32	180	265	260	324	340	163	60	11		
25	1	105	41	185	274	265	322	345	143	65	10		
30	1.5	110	52	190	284	270	318	350	127	70	9		
35	2	115	65	195	293	275	313	355	113	75	8		
40	3	120	79	200	300	280	308	360	98	80	7		
45	4	125	95	205	307	285	300	5	84	85	6		
50	5	130	111	210	312	290	293	10	72	90	5		
55	6.5	135	128	215	317	295	284	15	58	95	3.5		
60	7.5	140	145	220	321	300	274	20	45	100	2.5		
65	8	145	161	225	324	305	263	25	35	105	2		
70	9.5	150	179	230	325	310	250	30	27	100	1		
75	11	155	194	235	326	315	237	35	22	115	.5		
80	13	160	209	240	326	320	224	40	18	120	0		
						225		45	15				

INLET

240	0	315	20	30	239	105	341	180	261	255	30	330	.5
245	.5	320	26	35	253	110	341	185	248	260	23	335	0
250	1	325	33	40	266	115	341	190	234	265	18		
255	2	330	44	45	278	120	341	195	219	270	15		
260	3	335	58	50	290	125	340	200	204	275	13		
265	3	340	73	55	298	130	338	205	188	280	11		
270	4	345	90	60	307	135	335	210	172	285	10		
275	5	350	108	65	315	140	330	215	154	290	9		
280	6	355	125	70	321	145	325	220	136	295	8		
285	7	360	143	75	327	150	320	225	118	300	7		
290	8	5	161	80	332	155	313	230	100	305	6		
295	9	10	177	85	335	160	304	235	84	310	5		
300	10.5	15	194	90	338	165	295	240	68	315	3.5		
305	12.5	20	210	95	340	170	285	245	54	320	2		
310	15	25	225	100	341	175	273	250	40	325	1		

EXHAUST

20	0	100	32	180	265	260	324	340	163	60	11		
25	1	105	41	185	274	265	322	345	143	65	10		
30	1.5	110	52	190	284	270	318	350	127	70	9		
35	2	115	65	195	293	275	313	355	113	75	8		
40	3	120	79	200	300	280	308	360	98	80	7		
45	4	125	95	205	307	285	300	5	84	85	6		
50	5	130	111	210	312	290	293	10	72	90	5		
55	6.5	135	128	215	317	295	284	15	58	95	3.5		
60	7.5	140	145	220	321	300	274	20	45	100	2.5		
65	8	145	161	225	324	305	263	25	35	105	2		
70	9.5	150	179	230	325	310	250	30	27	100	1		
75	11	155	194	235	326	315	237	35	22	115	.5		
80	13	160	209	240	326	320	224	40	18	120	0		
85	16	165	225	245	326	325	210	45	15				
90	19	170	238	250	326	330	195	50	13.5				
95	25	175	250	255	325.5	335	179	55	12				

DYNAMOMETER READINGS

6-12-66

736cc INTERCEPTOR WITH LOW LIFT DELONG CAMSHAFTS

IGN TIMING 34° 12 Volt Coil Ignition

ENGINE SPROCKET 29T MONOBLOC CARBURETTOR.

CLUTCH " 56T 5.460" PUSH ROD LENGTH.

FINAL DRIVE " 20T

BRAKE " 20T

R.P.M.	LBS.	B.H.P.	+10%	+15%
4000	55	25.3	27.8	29.1
250	53	25.9	28.5	29.8
500	52.5	27.2	29.9	31.3
750	52	28.4	31.2	32.7
5000	52.5	30.2	33.2	34.7
250	53.5	32.3	35.5	37.2
500	53	33.5	36.9	38.5
750	52	34.4	37.8	39.5
6000	51.5	35.6	39.2	40.9
250	50	36	39.6	41.4
500	49	36.7	40.4	42.2
750				
7000	49	39.5	43.5	45.4
250				
500	45	38.8	42.7	44.6

HIGH LIFT DELONG CAMS

R.P.M.	LBS.	BHP	BHP +15%	R.P.M.	LBS.	BHP	BHP +15%
3250	53.5	20 BHP	23	5250	54	32.6 BHP	37.5
3500	54	21.8	25.1	5500	53.5	33.8	38.9
3750	53	22.8	26.2	5750	54.5	36	41.4
4000	52	23.9	27.5				
4250	50	24.5	28.2				
4500	51	26.4	30.3	6500	54	40.4	46.5
4750	51.5	28.2	32.4	6750	53	41.1	47.2
5000	52	30.5	35.1	7000	52.5	42.3	48.7

IGN TIMING 34° 12 Volt Coil Ignition

ENGINE SPROCKET 29T

MONOBLOC CARBURETTOR.

CLUTCH " 56T

5.460" PUSH ROD LENGTH.

FINAL DRIVE " 20T

BRAKE " 20T

R.P.M.	LBS.	B.H.P.	+10%	+15%
4000	55	25.3	27.8	29.1
250	53	25.9	28.5	29.8
500	52.5	27.2	29.9	31.3
750	52	28.4	31.2	32.7
5000	52.5	30.2	33.2	34.7
250	53.5	32.3	35.5	37.2
500	53	33.5	36.9	38.5
750	52	34.4	37.8	39.5
6000	51.5	35.6	39.2	40.9
250	50	36	39.6	41.4
500	49	36.7	40.4	42.2
750				
7000	49	39.5	43.5	45.4
250				
500	45	38.8	42.7	44.6

HIGH LIFT DELONG CAMS

		20 BHP	BHP +15%			32.6 BHP	BHP +15%
3250	53.5	20 BHP	23	5250	54	32.6 BHP	37.5
3500	54	21.8	25.1	5500	53.5	33.8	38.9
3750	53	22.8	26.2	5750	56.5	36	41.4
4000	52	23.9	27.5				
4250	50	24.5	28.2				
4500	51	26.4	30.3	6500	54	40.4	46.5
4750	51.5	28.2	32.4	6750	53	41.1	47.2
5000	53	30.5	35.1	7000	52.5	42.3	48.7

INLET SPROCKET 36/40 INNER VALVE SPRINGS 4535B3

NO PACKING UNDER EX BOTTOM COLLAR

8.3 C.R.

VALUE LIFT READINGS

9-11-66

750 cc INTERCEPTOR ENGINE WITH LOW LIFT DELONG CAMSHAFTS
AND INLET SPROCKET W. 42507

EXHAUST TIMING 6° EARLY, INLET TIMING CORRECT

INLET

255	0	325	27	35	240	105	335	175	266	245	47	315	2.5
260	15	330	35	40	253	110	335	180	254	250	36	320	1.5
265	1	335	47	45	266	115	335	185	241	255	27	325	.5
270	2	340	62	50	278	120	335	190	226	260	20	330	0
275	3	345	77	55	288	125	334.5	195	210	265	16		
280	4	350	94	60	298	130	333	200	196	270	13		
285	5	355	110	65	306	135	330	205	179	275	11		
290	6	360	127	70	313	140	325	210	163	280	9.5		
295	7	3	145	75	320	145	320	215	145	285	8.5		
300	8	10	162	80	324	150	315	220	128	290	7.5		
305	10	15	178	85	328.5	155	307.5	225	110	295	6.5		
310	12	20	195	90	331.5	160	299	230	93	300	5.5		
315	16	25	210	95	333.5	165	289	235	76	305	4.5		
320	20	30	225	100	335	170	278	240	61	310	3.5		

EXHAUST

20	0	100	34	180	265	260	320	340	155	60	10		
25	.5	105	44	185	276	265	317	345	133	65	9		
30	1	110	56	190	285	270	313	350	118	70	8		
35	2	115	69	195	294	275	307	355	103	75	7		
40	2.5	120	84	200	301	280	301	360	88	80	5		
45	3.5	125	100	205	307	285	292	5	73	85	4.5		
50	5	130	116	210	312	290	284	10	60	90	3		
55	5.5	135	133	215	314.5	295	274	15	48	95	2		
60	6.5	140	149	220	320	300	263	20	37	100	1.5		
65	7.5	145	165	225	322	305	252	25	29	105	.5		
70	9	150	181	230	323	310	239	30	23	110	0		
75	10.5	155	196	235	323	315	225	35	18.5				
80	13	160	212	240	323	320	211	40	15.5				
85	16	165	227	245	323	325	197	45	13				

EXHAUST TIMING 6° EARLY, INLET TIMING CORRECT

INLET

255	0	325	27	35	240	105	335	175	266	245	47	315	2.5
260	15	330	35	40	253	110	335	180	254	250	36	320	1.5
265	1	335	47	45	266	115	335	185	241	255	27	325	.5
270	2	340	62	50	278	120	335	190	226	260	20	330	0
275	3	345	77	55	288	125	334.5	195	210	265	16		
280	4	350	94	60	298	130	333	200	196	270	13		
285	5	355	110	65	306	135	330	205	179	275	11		
290	6	360	127	70	313	140	325	210	163	280	9.5		
295	7	3	145	75	320	145	320	215	145	285	8.5		
300	8	10	162	80	324	150	315	220	128	290	7.5		
305	10	15	178	85	328.5	155	307.5	225	110	295	6.5		
310	12	20	195	90	331.5	160	299	230	93	300	5.5		
315	16	25	210	95	333.5	165	289	235	76	305	4.5		
320	20	30	225	100	335	170	278	240	61	310	3.5		

EXHAUST

20	0	100	34	180	265	260	320	340	155	60	10		
25	.5	105	44	185	276	265	317	345	133	65	9		
30	1	110	56	190	285	270	313	350	118	70	8		
35	2	115	69	195	294	275	307	355	103	75	7		
40	2.5	120	84	200	301	280	301	360	88	80	5		
45	3.5	125	100	205	307	285	292	5	73	85	4.5		
50	5	130	116	210	312	290	284	10	60	90	3		
55	5.5	135	133	215	314.5	295	274	15	48	95	2		
60	6.5	140	149	220	320	300	263	20	37	100	1.5		
65	7.5	145	165	225	322	305	252	25	29	105	.5		
70	9	150	181	230	323	310	239	30	23	110	0		
75	10.5	155	196	235	323	315	225	35	18.5				
80	13	160	212	240	323	320	211	40	15.5				
85	16	165	227	245	323	325	197	45	13				
90	20	170	241	250	323	330	182	50	12				
95	27	175	254	255	322	335	166	55	11				

TAPPET LIFT READINGS

6-12-66

750 cc INTERCEPTOR ENGINE WITH IN CAMSHAFT W. 35344, EX CAMSHAFT

W. 35345 & IN. SPROCKET W 42507

(AS SUPPLIED TO AMERICA 1966)

INLET

310	0	20	123	90	321	160	300	230	76
315	.5	25	142	95	327	165	289	235	62
320	1	30	161	100	332	170	277	240	49
325	2	35	178	105	336	175	264	245	37
330	5	40	196	110	338.5	180	250	250	27
335	10	45	214	115	340	185	235	255	18
340	16	50	230	120	340	190	219	260	12
345	24	55	245	125	339	195	201	265	7
350	34	60	259	130	337	200	184	270	3
355	45	65	273	135	334	205	165	275	2
360	58	70	285	140	329	210	146	280	.5
5	72	75	296	145	324	215	128	285	0
10	88	80	305	150	317	220	109	290	
15	105	85	314	155	309	225	92	295	

EXHAUST

75	0	155	160	235	323	315	232	35	12
80	.5	160	177	240	325	320	218	40	7
85	1.5	165	193	245	326	325	204	45	4
90	4.5	170	208	250	326	330	187	50	2
95	9	175	224	255	325.5	335	172	55	0
100	15	180	237	260	323.5	340	150		
105	22	185	249	265	321	345	135		
110	30	190	260	270	316	350	117		
115	41	195	271	275	311	355	100		
120	51	200	282	280	304	360	86		
125	64	205	292	285	297	5	71		
130	78	210	297	290	288	10	57		
135	93	215	304	295	280	15	46		
140	110	220	310	300	269	20	35		

(AS SUPPLIED TO AMERICA 1966)

... & IN. SPROCKET W 4 25 01

INLET

310	0	20	123	90	321	160	300	230	76
315	.5	25	142	95	327	165	289	235	62
320	1	30	161	100	332	170	277	240	49
325	2	35	178	105	336	175	264	245	37
330	5	40	196	110	338.5	180	250	250	27
335	10	45	214	115	340	185	235	255	18
340	16	50	230	120	340	190	219	260	12
345	24	55	245	125	339	195	201	265	7
350	34	60	259	130	337	200	184	270	3
355	45	65	273	135	334	205	165	275	2
360	58	70	285	140	329	210	146	280	.5
5	72	75	296	145	324	215	128	285	0
10	88	80	305	150	317	220	109	290	
15	105	85	314	155	309	225	92	295	

EXHAUST

75	0	155	160	235	323	315	232	35	12
80	.5	160	177	240	325	320	218	40	7
85	1.5	165	193	245	326	325	204	45	4
90	4.5	170	208	250	326	330	187	50	2
95	9	175	224	255	325.5	335	172	55	0
100	15	180	237	260	323.5	340	150		
105	22	185	249	265	321	345	135		
110	30	190	260	270	316	350	117		
115	41	195	271	275	311	355	100		
120	51	200	282	280	304	360	86		
125	64	205	292	285	297	5	71		
130	78	210	297	290	288	10	57		
135	93	215	304	295	280	15	46		
140	110	220	310	300	269	20	35		
145	126	225	316	305	258	25	26		
150	143	230	320	310	245	30	19		