75 cc Model

Swinging Arm Pivot Bearings available

E 2127 350 x 500 BSA

5/8 i/d, 1 1/4 o/d, 2 1/4 length of outer sleeve.

4 11/16 length of Inner sleeve.

E 21210 650 BSA

13/16 i/d, 1 1/4 o/d, 2 1/4 length of outer sleeve.

4 11/16 length of Inner sleeve.

Lengths can be modified.

E 2080 is the series used on our present models

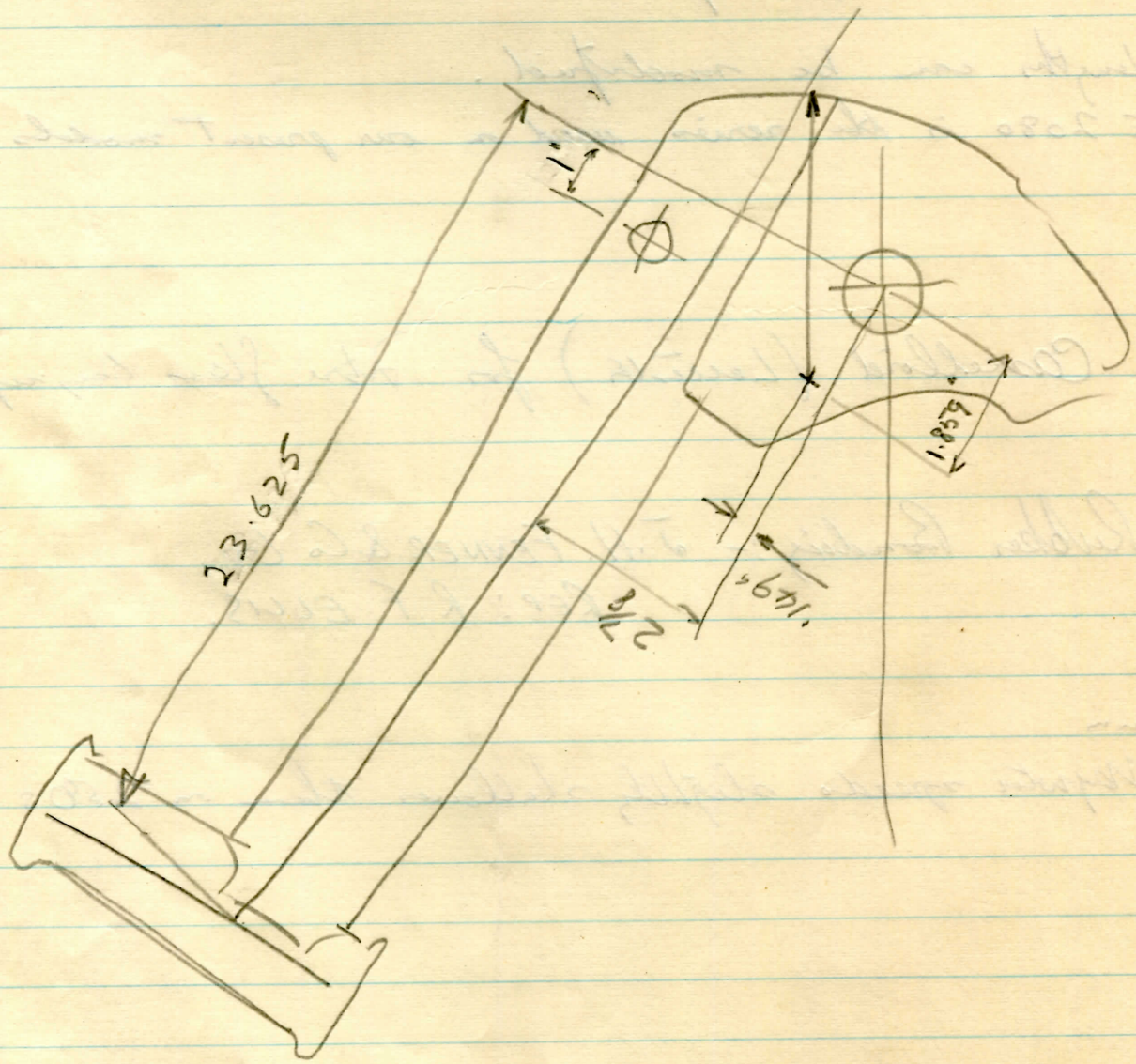
Cascelloid (Leicester) for Fibre Glass Layup

Rubber Bonding :- J. H. FENNER & Co Ltd.

REP: R. F. ELLIS.

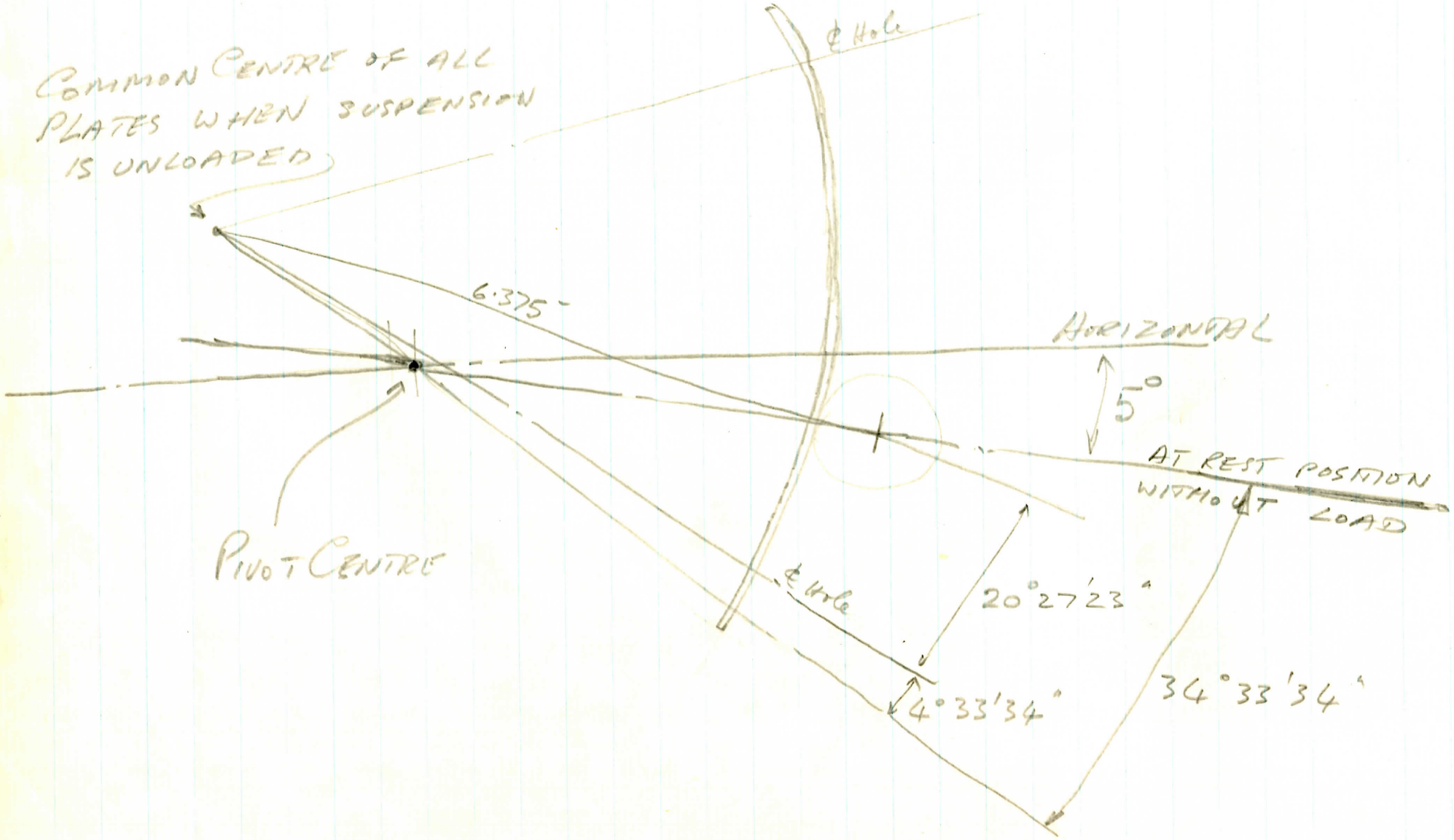
60 mm

Magneto speeds slightly shallower than on 250's



Frame

RUBBER SUSPENSION UNIT



Prototype with 50cc engine

Rear chain line 2.056"

Rear Sprocket 30 teeth
Width .176/.168"

O/Dia ~~5.120"~~ 5.070"
Pitch Dia ~~4.963"~~ 4.783"

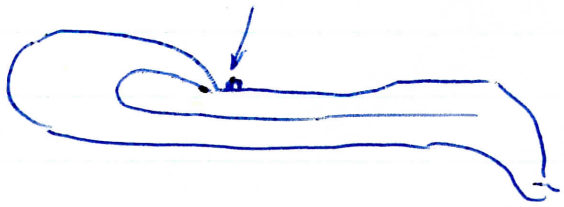
Bolt Dia ~~4.658"~~ 4.478"
~~4.643"~~ 4.468"

Rear Chain ½" pitch x .305" dia roller. (Britax?)

Sprocket patterned on Ensign W.42794 but slightly thinner alters normal chainline of Ensign to the 2.056 (above)

Top Gear Ratio = ~~14.64~~ 14.72
Bottom " " = ~~26.58~~ 26.38

Fibreglass Body - Form rib to stop water entering seat



6-9-63

Estimated Revs/mile of 17×2.50 Type = 919

Speedo drive is ½ speed of c'shaft sprocket.

With 38T Rear Sprocket, Speedo drive would do

$\frac{38}{12} \times 919 \times \frac{1}{2}$ = 1460 Revs/mile.

(1490 if Type gives 940 Revs/mile)

With 44T Rear Sprocket, Speedo drive would do

$\frac{44}{12} \times 919 \times \frac{1}{2}$ = 1690 Revs/mile

(1725 if type gives 940 Revs/mile)

With speedo drive from Front Wheel 18:10 box would give 1658 Revs/mile on drive cable.

If Dunlop revs/mile are incorrect as Smiths have found to be the case on tests made on other sizes of ~~tyres~~ types then it is likely that 17×2.50 types might give 960 revs/mile and then 18:10 box would give 1692 Revs/mile on drive cable.

Red Fibre-Glass Body. — Inserts under seats were ⅛" too far back, holes redrilled correctly.

PRICES

TYRE, TUBE & RIM TAPE (COMPLETE)		250×17	37/6
		3.00×17	42/6
		2.25×17	39/8
Rim	WM1 17	8/2d each — not plated	
	WM0 17	8/- " " "	

2-4-64 ~~MOTORI~~ MOTORI-MORINI-FRANCO

80 cc 2-STROKE 4 SPEED ENGINE UNIT

45 mm BORE x 49 mm STROKE = 77.93 ccs.
C.R. 8.5:1
5 BHP @ 6,800
Generator 28 W, 6 V.
Dell'Orto UA 19 S Carb.
Petrol Mixture 1:20
Sparking Plug CW 240 x 14 mm.

PRIMARY GEAR RATIO 1:3.1

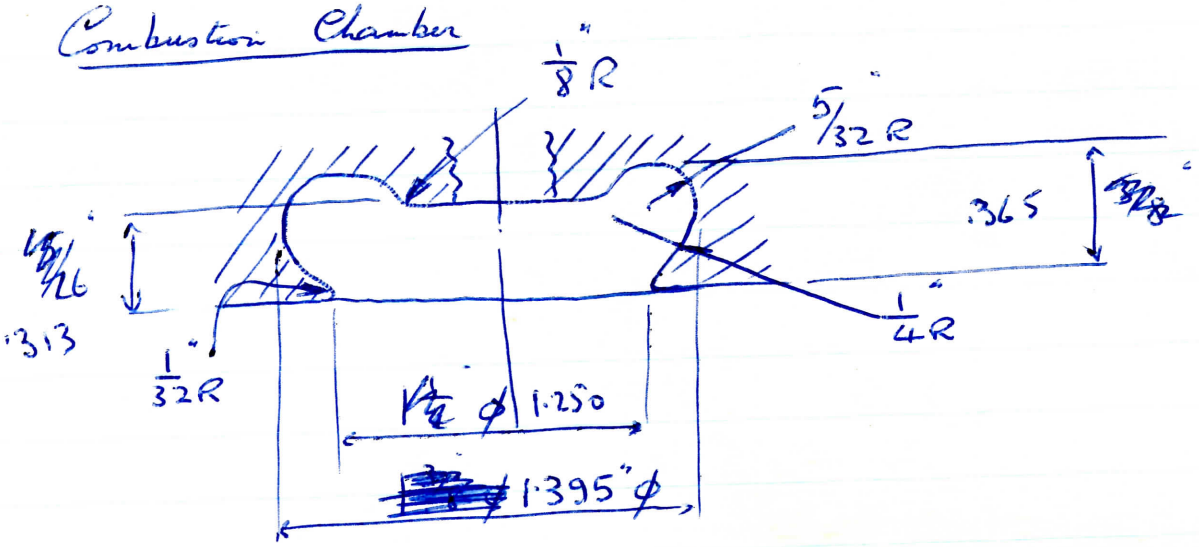
GEAR BOX RATIOS (INTERNAL)		ENGINE/FINAL DRIVE SPROCKET
1ST :	1 : 3.3	1 : 10.23
2ND :	1 : 1.933	1 : 5.992
3RD :	1 : 1.529	1 : 4.739
TOP :	1 : 1.2	1 : 3.72

REAR CHAIN – ½" PITCH x 3/16 WIDE x .305" dia roller.
FINAL DRIVE SPROCKET 14 T
REAR SPROCKET TO SUIT 19"x2.75 REAR TYRE = 38
" – – 17"x2.50 – – = 35
REAR CHAINLINE = 2.658 (ENGINE CENTRAL)

WEIGHT = 35.27 lbs
OIL CAPACITY = 1.43 pts.

75cc 2/Stroke Engine

Combustion Chamber



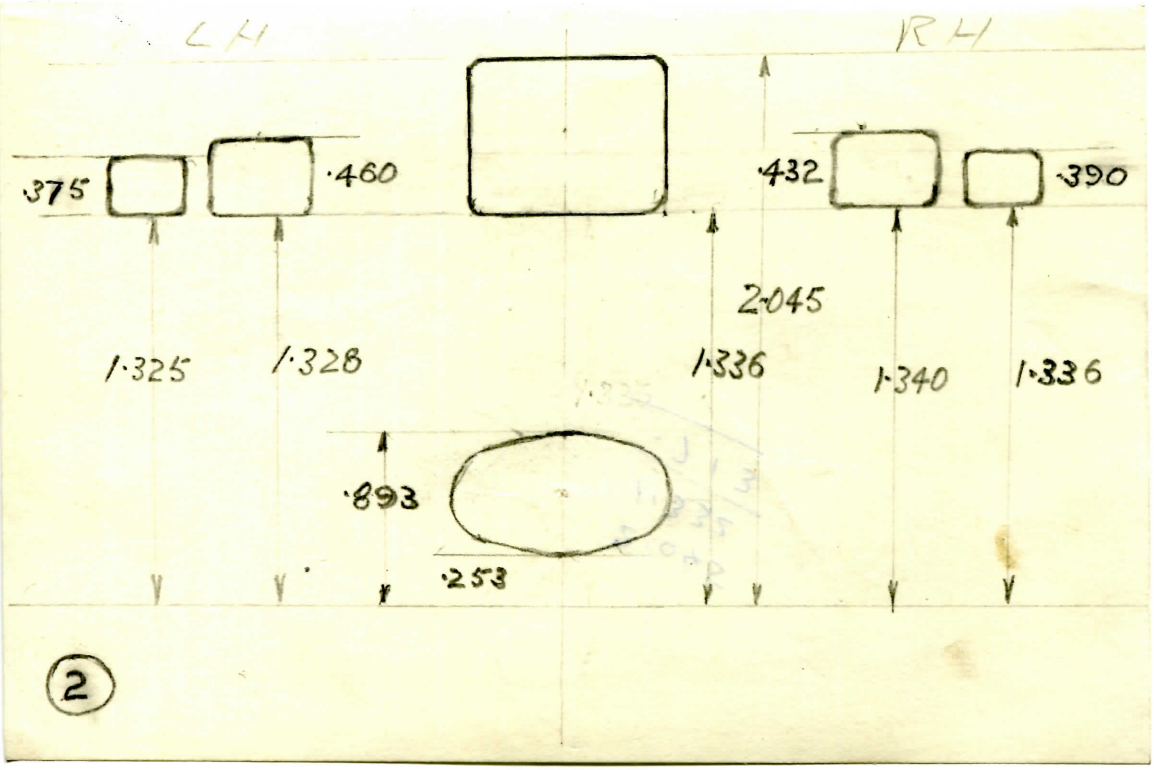
Sparking Plug. Lodge HH14

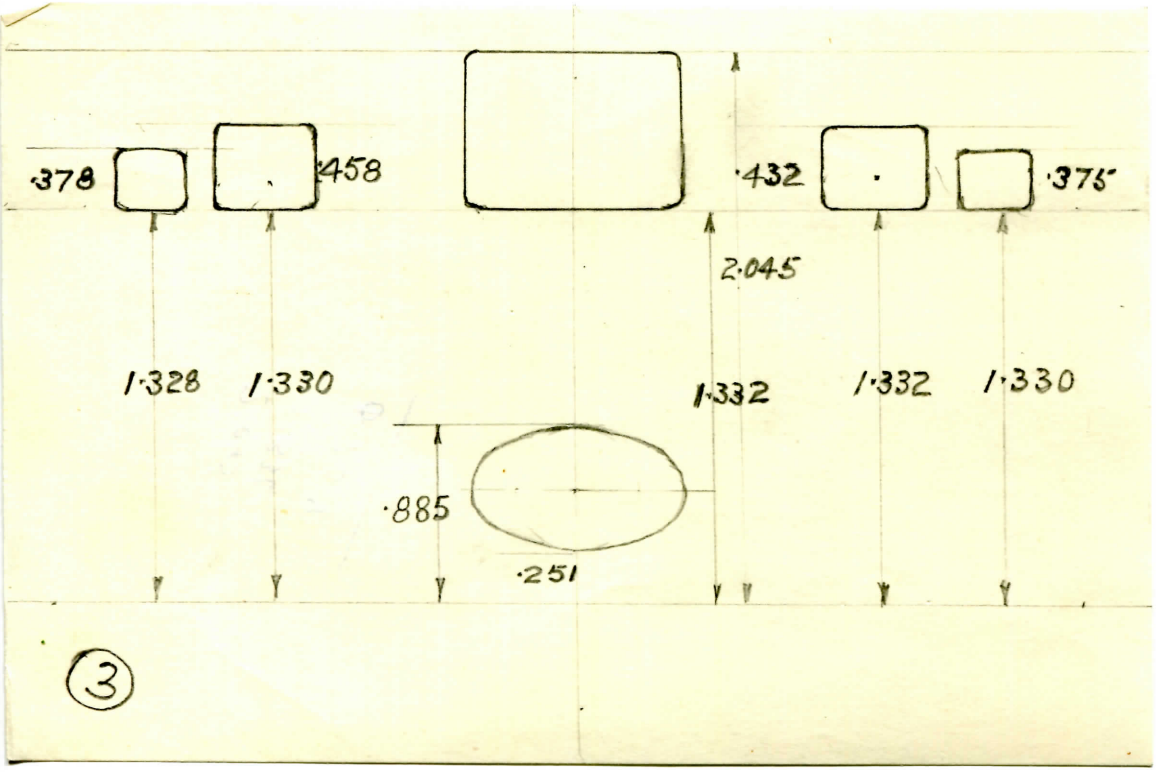
Piston Dimensions

Top land Dia	= 1.917"
2nd " "	= 1.918"
Top of Skirt (fore & aft)	= 1.924"
" " " (across)	= 1.919"
Bot. " " (fore & aft)	= 1.926"
" " " (across)	= 1.921"
Height - overall	= 2.053"
Height to ℄ / Pin	= .871"
Groove width	= .064"
" Bot. dia	= 1.715"
℄ / Pin Dia	= .493"
" length	= 1.621"
" centre hole dia	= 1/4"
Ring width	= .063"
" section depth	= .070"

Ign Timing 1/32" Before T.D.C.

Cyl. Base Gasket .010" - .012" Thick





Con Rod Total	3 ozs	12 Dr
Small End	1 "	10 "
Piston	5 "	3 "
Big End less Rollers and Crank Pin	2 "	2 "
" complete	5 "	6 "

Weight of machine = 154 lbs + Rider (Host: 154 lbs) ~~= 300 lbs~~ = 308 lbs

$A = 40 \text{ lbs/Ton} \cdot \frac{40 \times 3.8}{2240} = \frac{12320}{2240} = 5\frac{1}{2} \text{ lbs}$

$R = 5.5 + .015 V^2$

$B.H.P = \frac{1.47 V (5.5 + .015 V^2)}{550}$

B.H.P.	$\frac{1.47 V}{550}$	V	V^2	$.015 V^2$	R
1.525	.0802	30	900	13.5	19
2.2×3	.0935	35	1225	18.35	23.85
3.415	.1070	40	1600	24	29.5
4.63×1	.1202	45	2025	30.4	35.9
5.75×5	.1338	50	2500	37.5	43
7.48	.1471	55	3025	45.4	50.9
9.54	.1605	60	3,600	54	59.5
11.95	.1738	65	4,225	63.4	68.9
6.75	.1418	53	2809	42.14	47.64
7.1	.1442	54	2916	43.74	49.24

~~5 + 2×8~~ 21

2.025 × 15 = 20250 + 10125 = 30.375

3.025 × 15 = 30250 + 15125 = 45.375

4.225 × 15 = 42250 + 21125 = 63.375

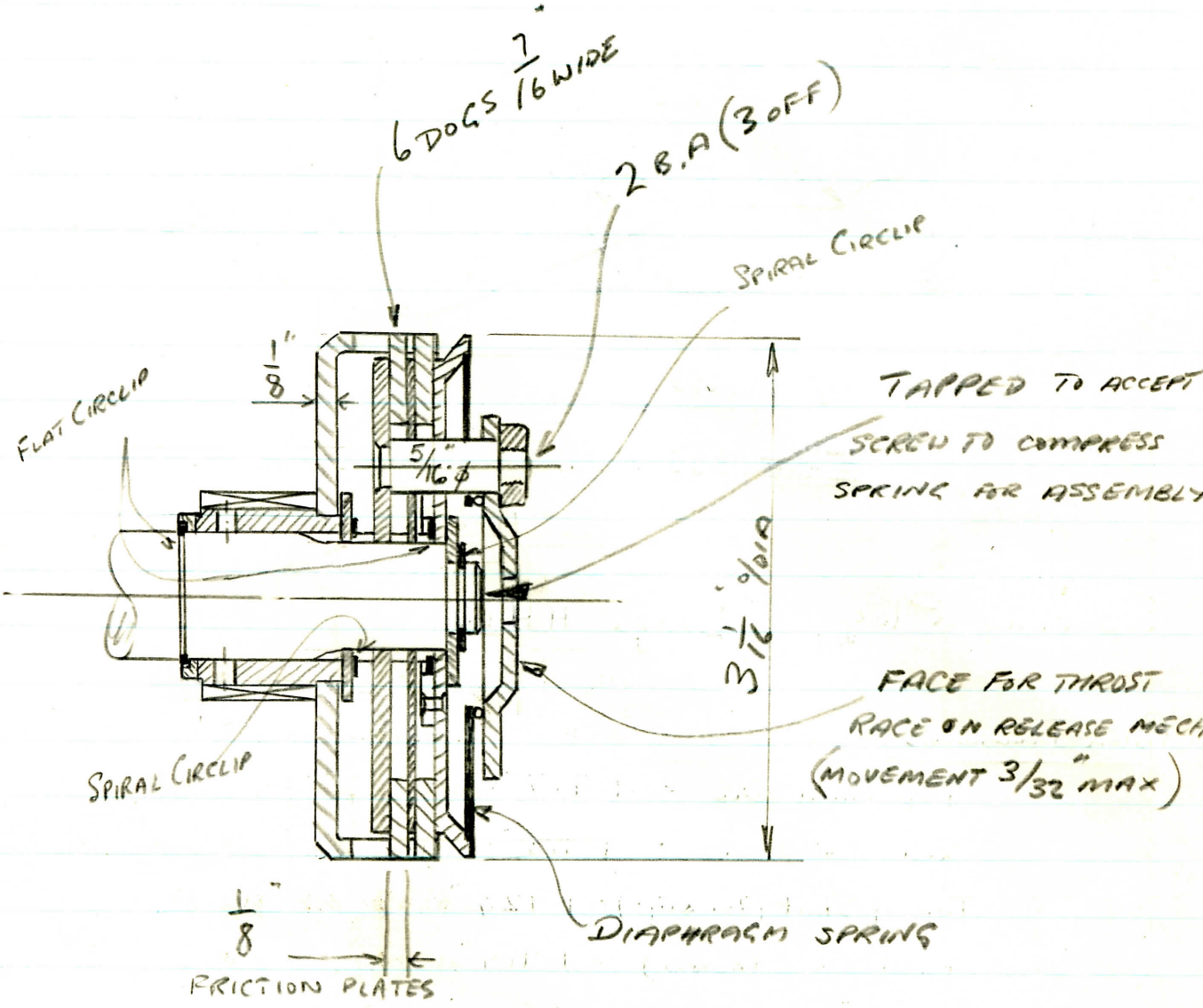
502 14.7 44.1

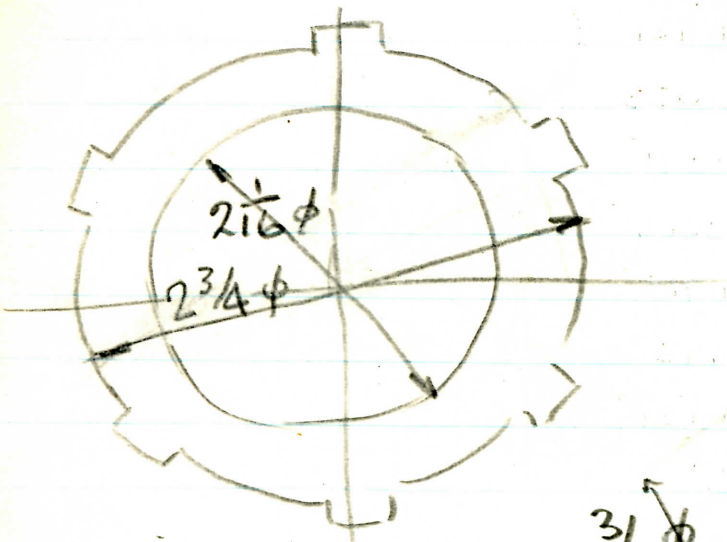
55) 4.41 (.08

2.916 × 15 = 29160 + 14580 = 43.740

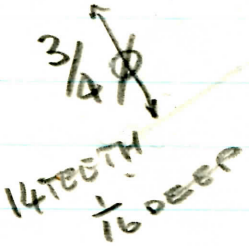
2.809 × 15 = 28090 + 14045 = 42.135

DIAPHRAGM CLUTCH 10-3-64

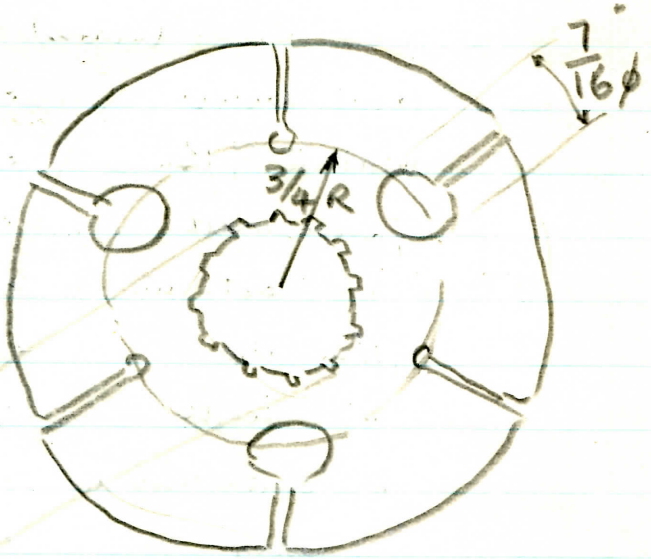




1/8 FRICTION PLATE



14 TEETH 1/16 DEEP



1/16 THICK PLATE

ARMSTRONG SPRING BOXES 16-12-64

OTG/S-55018 . SERIAL No C17 & C18
CHROME PLATED TOP COVERS.

With Cylinder Orifice hole ·160" from top of cylinder and fitted with ATG/698 (75/110 lbs) Road Springs

---

12·2·65

[illegible] series 141 Output 21W or 24W (max 28·8W)
18W [illegible] lamps should be o.k.

23-2-65

ARMSTRONG SPRING BOXES

Received 2 Road Springs ATL/758 (60 lbs/in)

Sachs 97cc Engine/4speed unit

Crankshaft/Layshaft Ratio = 14:34 = 2.43

Layshaft/Mainshaft Ratio = .94 top

Overall Crankshaft/Final Drive Sprocket Ratios =

7.6; 4.11; 2.88; 2.3

Final Drive Sprocket 12T
Rear Chain ½" x 5/16 x .335" dia roller

Rear Wheel Sprocket 36T = 6.89 top Ratio

= 53.75 mph @ 5,750 R.P.M.

Weight 154 lbs. + Rider.

.09
08

'57

$R = A + BV^2$

R = total resistance. lbs.
V = Speed . m.p.h.
A = a constant depending on laden weight and road conditions and type of tyre. (40 lbs per to for pneumatics on concrete o tar-mac roads)
B = a constant dependending on frontal area and degree of streamlining. (·014 - ·01 for motorcycles, rider prone no fairing.

$B.HP = \frac{1.47 V R}{550}$

ENFIELD - ALBION 80cc ENGINE-GEAR BOX UNIT 18-1-65

PRIMARY CHAIN 14T - 35T (OR LARGER)
3/8" PITCH x .25" DIA ROLLER x .225" WIDE

FINAL SPROCKET 14T, .500" PITCH x .335" DIA ROLLER x .205" WIDE

REAR CHAINLINE 2 1/16"

GEARBOX RATIOS 1, 1.25, 1.75, 3

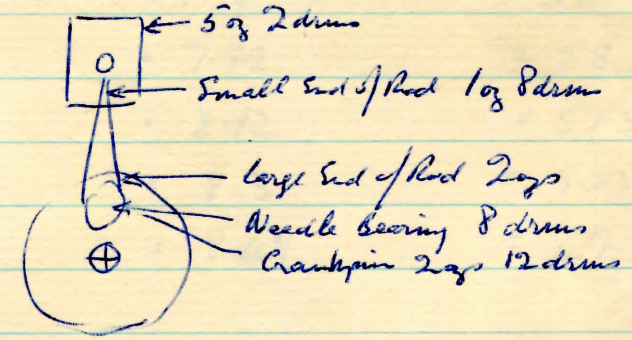
100cc 50 m/m x 50 m/m .98 $\frac{1}{4}$ ccs 10-3-65

ILO Piston Ref. 15347 (Compression Height 40.25 m/m to top of dome) Overall - 61.25 m/m

9/Pi 12 — 0

Estimated cost 15/- ?

Balance (Estimated)



Piston etc, & Small end of rod = 6 ozs 10 drms.
50% balance = 3 ozs 5 drms.

3 ozs 5 drms + 2 ozs + 8 drms + 2 ozs 12 drms = 8 ozs 9 drms
= 4 ozs 4 $\frac{1}{2}$ drms per wheel.

Crankpin hole saves 1 oz 8 drms leaving 2 ozs 12 $\frac{1}{2}$ drms to balance in each wheel
2 ozs 12 $\frac{1}{2}$ drms at .986" throw = 2.706 in/ozs. per wheel

100 cc

Primary Chain 14T - 37T

3/8 pitch x .25" dia Roller x .225" wide x 50 pitches

Centre Distance = 4.3747"

Rear Chain 14T - 40T

½" pitch x .335" dia Roller x .205" wide

Primary Chainline = $3\frac{1}{16}$"

Rear Chainline = $2\frac{9}{16}$"

Top Gear Ratio = 7.55 : 1

Rear Tyre = 17" x 2.50 = 932 Revs/mile.

= 55.5 mph at 6,500 & 59.7 mph at 7,000

37T Rear Sprocket	= 6.98 Top Gear	= 60 mph at 6,500
38T	= 7.17	= 58.5
39T	= 7.36	= 57
40T	= 7.55	= 55.5
41T	= 7.74	= 54
42T	= 7.92	= 53
43T	= 8.12	= 51.5
44T	= 8.3	= 50.5
45T	= 8.49	= 49.5

$$\left(\frac{\text{Engine speed in Revs/min}}{\text{Gear Ratio}} \times \frac{60}{\text{Revs/mile of Rear Wheel}} = \text{M.P.H.} \right)$$

Gearbox Ratios = 1, 1.22, 1.475, 1.965, 2.92

Overall Ratios = 7.55, 9.21, 11.12, 14.83, 22.2

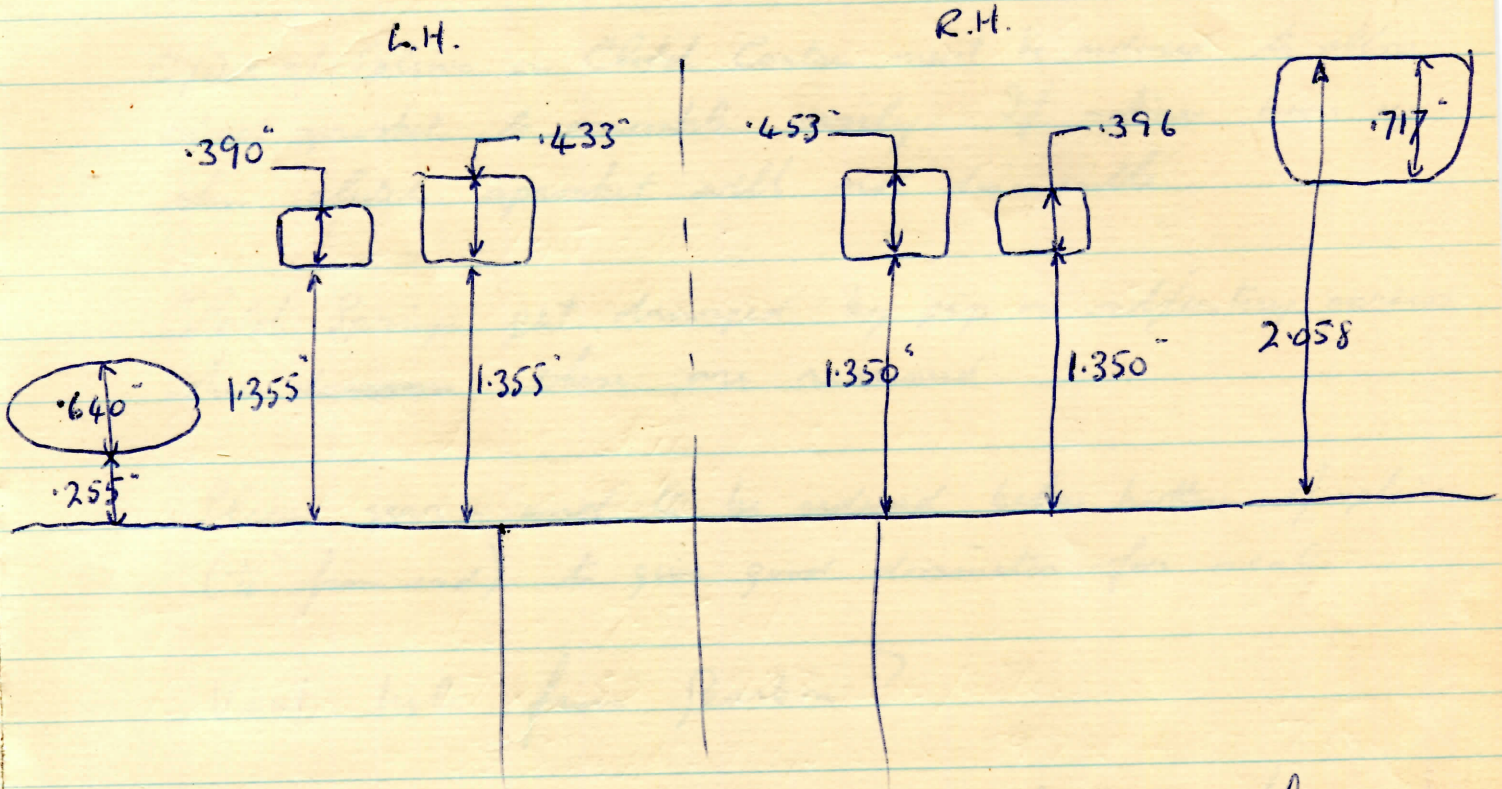
Volume of Crankcase (less Piston) up to Bottom of Ex Port = 215 cc

Volume of Piston Complete = 56 cc

Volume of Crankcase with Piston at Bottom of stroke = 159 cc

Crankcase C.R = $\frac{159+98}{159} = \frac{257}{159} = \underline{1.62}$

1st Prototype 98cc 2/stroke - 5 speed.



Port Dimensions as measured on 1st Barrel

Armstrong Rear Spring Boxes 23-9-65

OT6/S-55026 SERIAL NOS 65242/1 & 65242/2
Fitted with AT6/622 (60/120 lbs/in) Road Springs *
ARM 5", STROKE 2"

Volume of Combustion Chamber = 12cc

$$C.R. = \frac{98+12}{12} \cdot 9.17$$

Balance

Conn Rod - Small End including Bush	1 oz	10 drms	3 oz 12 drms
Big End - less Rollers & Crankpin	2 oz	2 drms.	
Crankpin & Rollers	3 oz	4 drms	5 oz 6 drms
Piston - with G/Pin & Circlips	5 oz	3 drms	

11-10-65

Assembly of 1st Prototype 100cc Unit Construction 2/Stroke

O/Dia of Splines on Clutch Centre must be reduced to allow clutch sprocket to assemble easily. If splines burr up then clutch sprocket will not dismantle.

Clutch Springs get damaged by pip on adjusting screws when [redacted] these are removed.

Sleeve gear - end to be reduced below bottom of splines ($\frac{1}{4}$" from end) to give good diameter for seal.

Vent hole from Gearbox?

Patt alteration reqd. to prevent oil leaking from gearbox through Primary Chaincase screw hole.

Shorter boss and stud for Gearbox Cover where foot-change lever spring fouls.

Trial-drive Sprocket locking screw fouls hex. of nut and recess in sprocket

Add 2 cable clips to engine for mag. wires.

Hole from grease nipple on Clutch lever-pivot to feed lower bearing in addition to top bearing.
Spring reqd. on Clutch lever pivot

Increase angle of piston ring pegs from 30° to 35° each side of ℄

Oil flowing from clutch push rod hole in G/Box Cover.

11-11-65

Assembly of 1st Prototype 100cc Unit Construction 2/Stroke

Continued

Shorten Amal Induction Pipe by 1/4"

Clutch Sprocket in too far, out of line with engine sprocket
O/DIA of Clutch centre ring (2.250") too large to fit
2 3/16 dia recess in Clutch Back Plate

Centre distance between engine and gearbox mainshaft
centres given as 4.376" by Messrs Renolds Chains

Alter position of Front Crankcase Dowel - Patts to be altered

Body prices

1 March 1966

3oz Body	2,000 off	5-19-4
	5,000	5-13-2
2oz Body	2000	5-11-7
	5000	5-5-11

Tool Charge £23 per 250 off

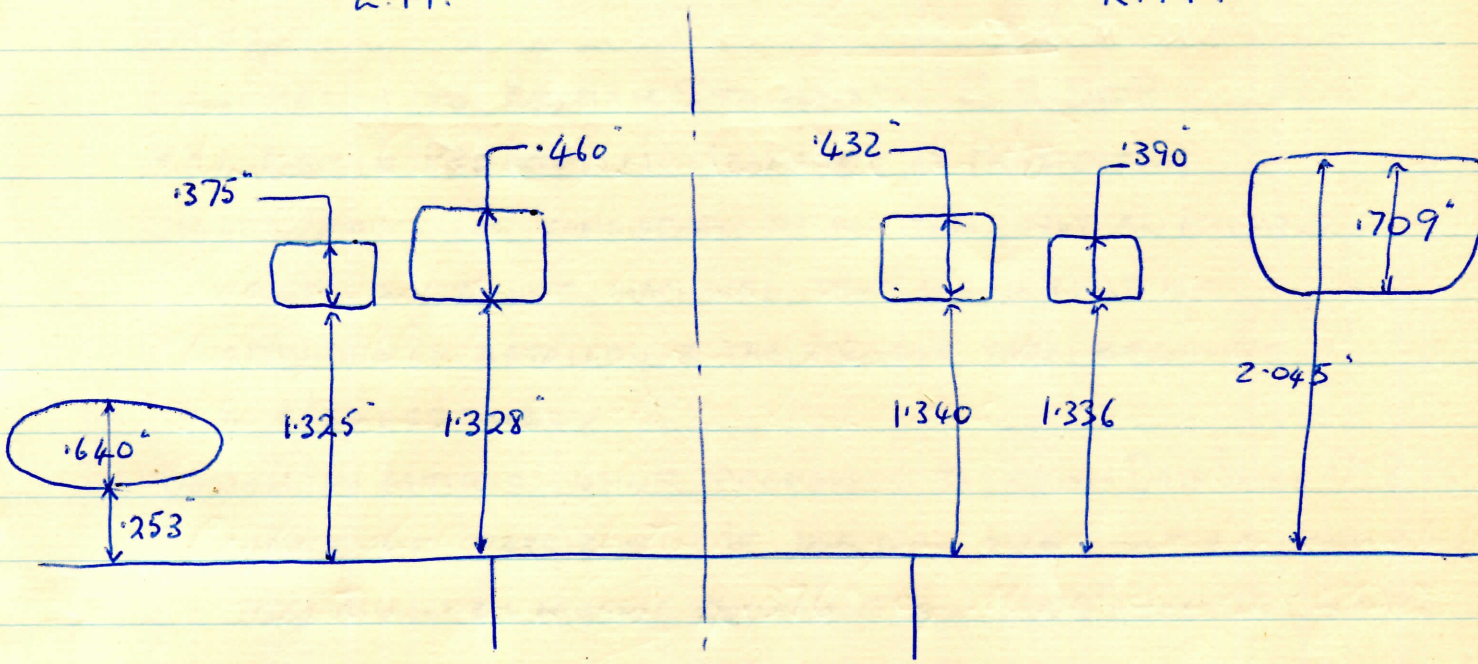
Nominal tool charge for developing ~~[illegible]~~ Tank bottom

Enfield to supply 2 fixing pommels & ~~[illegible]~~ Chrome Filler Cap.

N° 2 Barrel. 98 cc 2/Stroke - 5 speed

6/1/66

L.H. R.H.



N° 3 Barrel 98 cc 2/Stroke - 5 speed

6/1/66