# Table of Contents



# INPUTS

```
boreDia = 94.065; %mm the diameter of your bore, this will effect both new and
 comparisons.
strokeL = 101.6; %mm how far the piston moves up and down, also the diameter
 of the rotation
connectRodL = 190.5; %mm length of connecting rod

valveCloseOne = 53; % degrees in which your original engine needs to rotate
 before it closes its valve from BDC
valveCloseTwo = 59; % offset in degrees you want to change your cam to compare
 effects

squish1 = 96.5; %cc compressive area of TDC piston
squish2 = 92.8; %cc compressive area of your new config, maybe the head had
 been shaved down and you can account for it here
```

# Equations for valve opening @ position

```
BDCLength = strokeL + connectRodL;
dia = strokeL / 2;
%dont touch these, they're correct!
a1 = dia - (cosd(valveCloseOne)*dia);
a2 = sind(valveCloseOne) * dia;
b1 = dia - (cosd(valveCloseTwo)*dia);
b2 = sind(valveCloseTwo) * dia;
valveCloseL1 = cosd(asind(a2 / connectRodL)) * connectRodL + a1 - connectRodL;
valveCloseL2 = cosd(asind(b2 / connectRodL)) * connectRodL + b1 - connectRodL;
```

# Equations for compression ratios

```
%acutal and theo compression volumes
cci_Static1 = (((boreDia^2 * pi) / 4)*strokeL) / 1000;
  %CC of a cylinder bore static
cci_Dynamic1 = (((boreDia^2 * pi) / 4)/1000) * (strokeL - valveCloseL1);
  %CC of a cylinder bore with actual timing.
cci_Static2 = (((boreDia^2 * pi) / 4)*strokeL) / 1000;
cci_Dynamic2 = (((boreDia^2 * pi) / 4)/1000) * (strokeL - valveCloseL2);
%Adding the bore volume with the squish or volume from the head
totalStatVol1 = cci_Static1 + squish1;
totalDynVol1 = cci_Dynamic1 + squish1;
totalStatVol2 = cci_Static2 + squish2;
```

```
totalDynVol2 = cci_Dynamic2 + squish2;
%compression ratios of static and dynamic(acutal)
compStatRatio1 = totalStatVol1 / squish1;
compDynRatio1 = totalDynVol1 / squish1;
compStatRatio2 = totalStatVol2 / squish2;
compDynRatio2 = totalDynVol2 / squish2;

%swept calc(How much air is estimated to be swept in in the intake stroke)
swept1 = strokeL - valveCloseL1;
swept2 = strokeL - valveCloseL2;
%estimated intake volumes
sweptEffectVol1 = swept1 * ((boreDia^2 * pi) / 4) / 1000;
sweptEffectVol2 = swept2 * ((boreDia^2 * pi) / 4) / 1000;
```

# Display the results

```
fprintf("\nStatic comp ratio of stock cam = %0.2f : 1", compStatRatio1);
fprintf("\nEffective comp ratio of stock cam = %0.2f : 1", compDynRatio1);
fprintf("\nEffective Swept volume for stock config = %0.3f cc",
 sweptEffectVol1);

fprintf("\n\nStatic comp ratio of new cam = %0.2f : 1", compStatRatio2);
fprintf("\nEffective comp ratio of new cam = %0.2f : 1", compDynRatio2);
fprintf("\nEffectiv Swept volume for new config = %0.3f cc\n",
 sweptEffectVol2);
```

```
Static comp ratio of stock cam = 8.32 : 1
Effective comp ratio of stock cam = 7.17 : 1
Effective Swept volume for stock config = 595.857 cc

Static comp ratio of new cam = 8.61 : 1
Effective comp ratio of new cam = 7.14 : 1
Effectiv Swept volume for new config = 569.900 cc
```

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