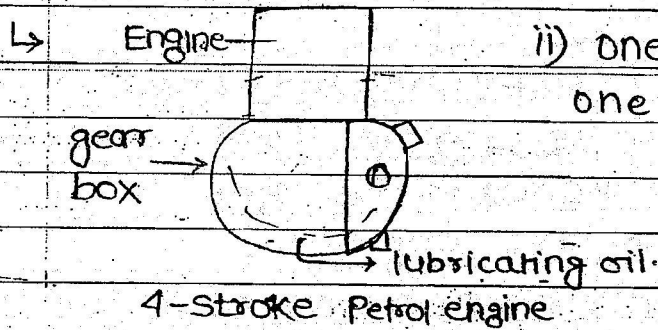


* Difference b/w 2-stroke petrol engine and 4-stroke petrol engine.

i) - The two valve of a 4-stroke petrol engine is replaced by 3 ports in 2-stroke.



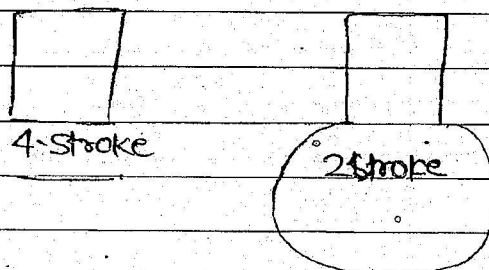
ii) One cycle $\rightarrow$ 2 stroke - 1 Rotation
One cycle $\rightarrow$ 4 stroke - 2 " "

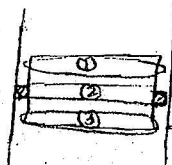
(4 cyl. 4-stroke $\rightarrow$ small Flywheel needed)

iii) In two stroke engine the lubricating oil is mixed with fuel and is then taken into the fuel tank. In the case of 4-stroke engine, the lubricating oil is taken separately.

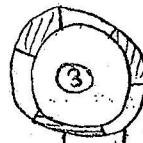
iv) The Flywheel of single cylinder 4-stroke engine is much bigger than that of a 2-stroke engine.

v) The Radiation heat loss is more for a 2-stroke engine as its surface area is more than that of a 4-stroke engine. This will result in less energy available for useful work output of a 2-stroke engine.

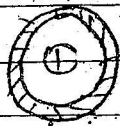




min 3 ring



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To avoid
To decrease
or transfer the press
from comb. chamber to cyl.

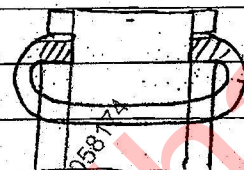


use to avoid lubricating oil
goes in comb. chamber

lower Ring
lubrication is better
but in 2-stroke the lubricating
oil is burnt

→ The thickness of Ring is some more than piston.

↳ So used brittle material. (CI) for ring



to break the ring, a separate sound
is comes so we identify.

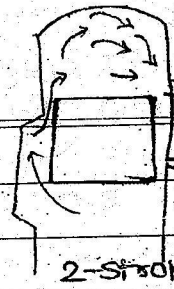
IF ductile
After some time

↳ Today Silicon cast iron is used. IF in option
SCI is not given then tick CI.

vi)

In Two stroke engine the lubricating oil enters to combustion chamber (ie in V_c) (clearance volⁿ m³) and small quantity of it ^{under} goes combⁿ during Heat addⁿ. Thus less lubricating oil will be available for the piston stroke after HA. The friction loss will be more. In the case of 4-stroke engine, the lubricating oil taken separately thus not enter in combⁿ chamber. The friction loss is less. Hence useful work out is more in the case of 4-stroke engine.

Shape of the air engine is more spherical



loss of Fuel.

So mileage is less

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2-Stroke	2-Stroke	4-Stroke
100 cc	100 cc	
1 kg Fuel.	1 kg Fuel.	
max 45 km		min 65-70 km

1 Rotation - 1 power

loss is more

input - 10 kW → output 8 kW

2 Rotation - 1 power

loss is less

input - 10 kW → output 9 kW

i.e. why 2-stroke engine is eliminated?

2-stroke engine is used in all vehicle in old day.

Why diesel engine is not comes in 2-wheeler

↳ because CR is high, Supercharger Required, cooler Required, Heavy engine so which is not space available in 2-wheeler

7) ↳ In 2-stroke engine, the transfer port & exhaust port are open at same time hence some fresh AF mixture will escape out of the exhaust port. Due to this reason the mileage of a 2-stroke engine is much less than that of 4-stroke engine. There is more loss b/w the input & output of a 2-stroke engine for every two rotation of the engine when compared with that of a 4-stroke engine.

8) The overall eff. of a 2-stroke engine is much less than that of a 4-stroke engine. Due to this reason all the 2-stroke engine on the road are presently replaced by 4-stroke engine.



DIFFERENCES B/W PETROL ENGINE

and DIESEL ENGINE :-

- The character of Diesel is that when we burnt the Diesel at low temp, then Knocking is more.

- all four wheeler will not have carburetors ^{use microprocessor}

I> For petrol engine, combⁿ should takes place below the self ignition temp. otherwise knocking will be severe. Hence a spark plug is used to have combⁿ at low temp. but in the case of Diesel engine knocking is much higher if comb. takes place at low temp. thus there is no spark plug for the Diesel engine. combⁿ of Diesel engine is takes place at very high temp. known as the self ignition temp.

→ In case of carburetor, if one time AFR fixed then it supply AF mixture at every time at same Ratio even engine is at low load. But in case of microprocessor which supply fuel acc to need (low or high load)

- During the last stage of compression, fuel is supply by injector

II> For carbureted petrol engine Air and Fuel mixed before the entering the engine cyl. Diesel engine do not have a carburetor.

iii) For the separate entry of fuel in diesel engine (at the end of compression stroke), a nozzle (also known as injector) is provided. Carburetted petrol engine do not have nozzle.

At present petrol engines without a carburetor has a microprocessor attached to this microprocessor, process the quantity of fuel to be supply to the engine very fast (less fuel for less load condⁿ). Hence the mileage for such petrol engine is much more than that of carburetted petrol engine. Such petrol engines are provided with a nozzle for the separate entry of fuel during the last stage of suction stroke.

iv) For the same comp. Ratio, the eff. of a petrol engine is more than that of Diesel engine. but this is theoretical.

v) In practice the CR of a diesel engine is 1.5 times to 3 times more than that of a petrol engine. Hence the eff. of a Diesel engine is much higher.

vi) For a petrol engine $\gamma = 6$ to 10
For a Diesel engine $\gamma = 16$ to 20 .

vii) HA takes place at const vol^m in the case of petrol engine & is at const. press for Diesel engine.

$q_w = q_u + q_{\text{out}}$
 $\uparrow$ HA $\downarrow$ $\rightarrow$ more in Diesel engine because more temp.

$\Rightarrow q_w + q_u = 0$
 $\Rightarrow \boxed{q_w = -q_u}$

I.E is 2 to 3 times more in D.E

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So more work is obtain

8. For petrol engine, at cruising speed, the AF Ratio is 16. It is b/w 25 to 35 in the case of Diesel engine.

FLASH POINT & FIRE POINT :

@ - The fuel are in contact b/w, Flash & Fire point to the Burner.

$\rightarrow$ Flash point temp. is min^m temp at which the fuel will get ignited in presence of a Burner. (Spark plug in case of petrol engine)

$\rightarrow$ Once the fuel gets ignited the sparking should not stop otherwise comb will not be proper and the fire of the ignited fuel will be put off.

$\rightarrow$ For continuous sparking when ignition takes place for more fuel the temp of charge will increase.

even without sparking is called the Fire point temp. It is thus clear that for ideal condⁿ sparking should continuous from Flash point to Fire point.