SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

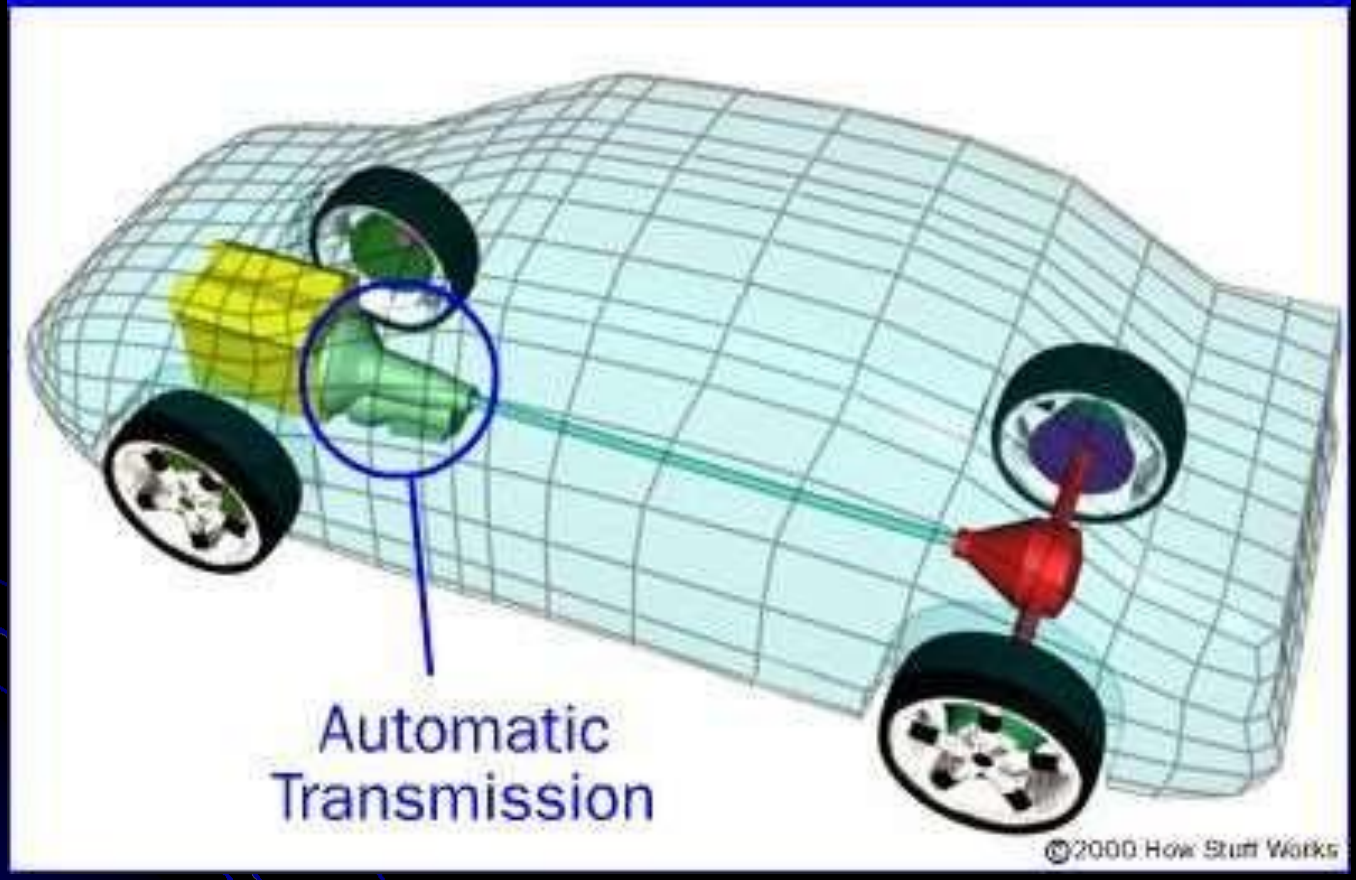
COURSE NAME : 23AUT101 – ELEMENTS OF AUTOMOTIVE SYSTEM

I YEAR /II SEMESTER

Unit 3- Transmission System

Topic : Fluid Flywheel, Overdrive

How Automatic Transmissions Work

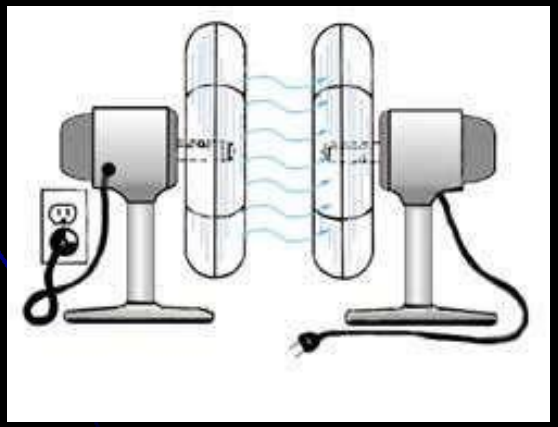


Fluid Coupling or Fluid Flywheel (Wet Clutch)

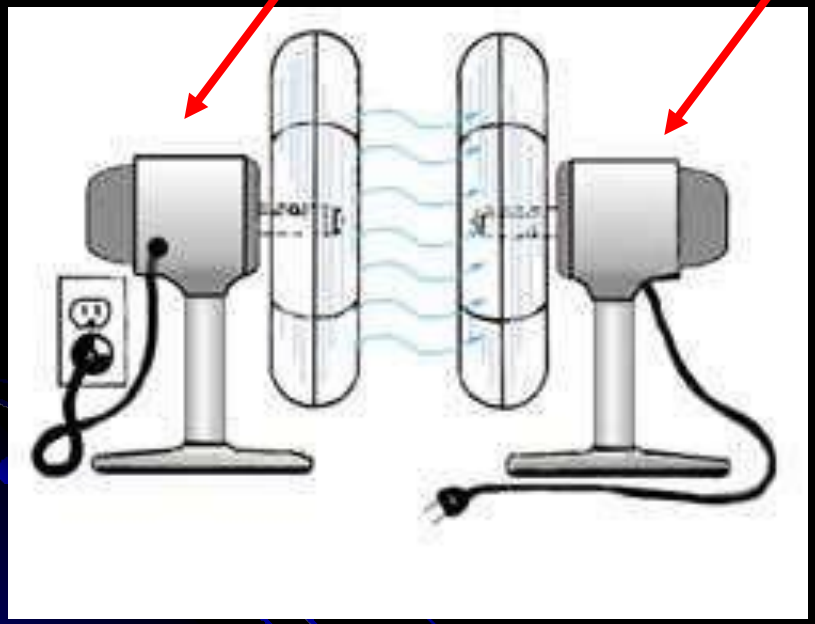
Fluid coupling is a device which is used to transmit torque from engine to gear box with fluid as working medium. The purpose of fluid coupling is to act as flexible power transmitting coupling.

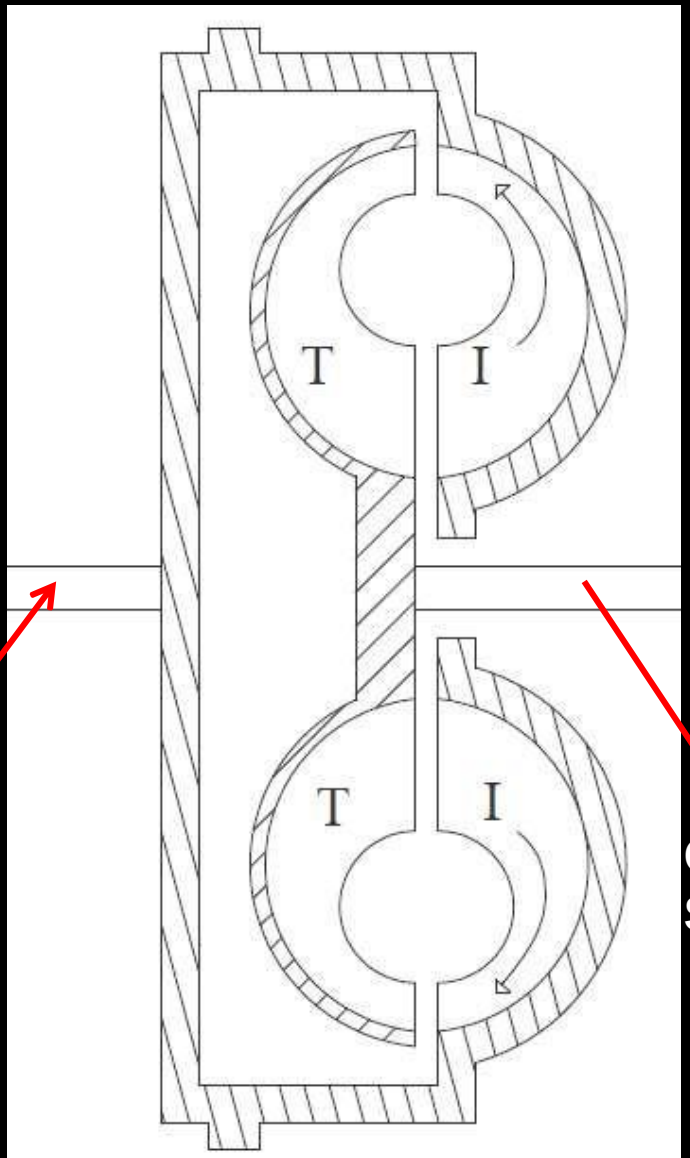
Principles of Operation

- There is no direct mechanical link between the input (engine flywheel) and the output (transmission input shaft)
- The impeller (pump of the torque converter) forces fluid through the turbine, which forces the turbine to turn
  - The turbine is splined to the transmission input shaft



Principles of Operation



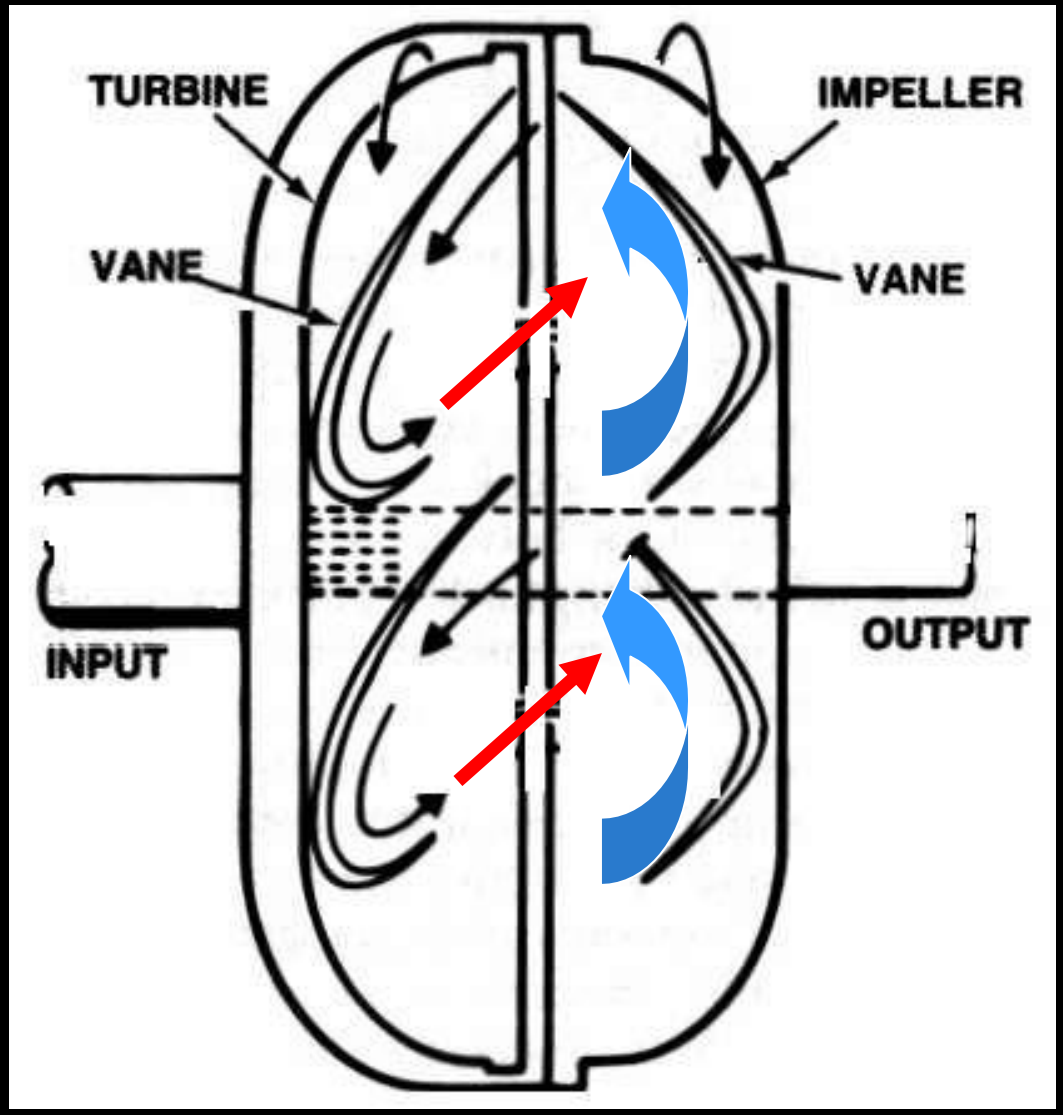


Fluid Coupling Problems

The fluid coming off the turbine strikes the impeller opposite the direction of rotation, thus slowing the impeller down

Acceleration was Poor

No torque Multiplication



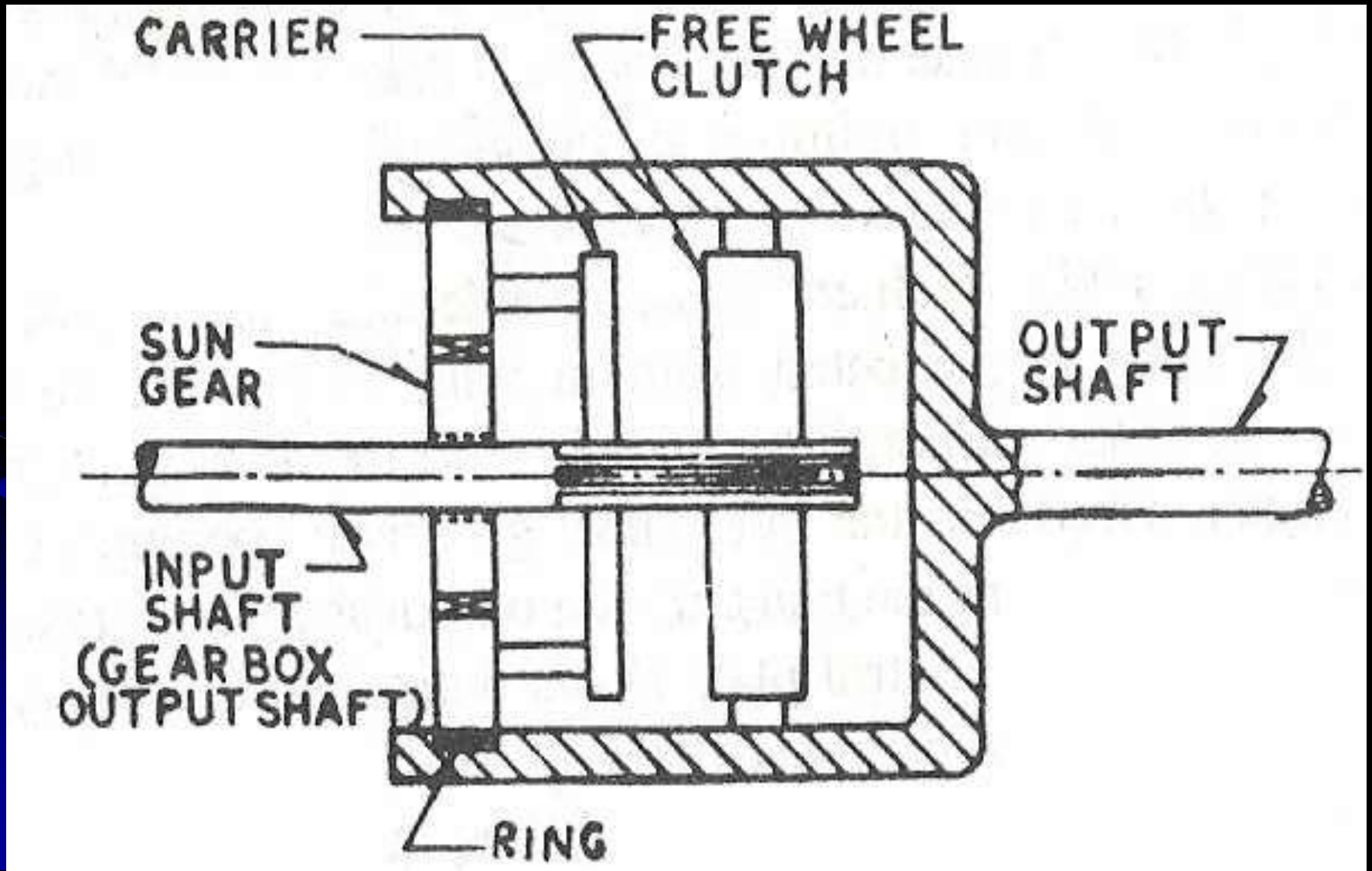
ADVANTAGES OF AUTOMATIC TRANSMISSION SYSTEM

1. Smooth operation.
2. Ease of control, i.e. it relieves the driver from fatigue due to the elimination of clutch and gear controls.
3. Numerous numbers of gear ratios are available.
4. Quick change of gear ratios effected automatically.
5. Minimum interruption of power during gear shifts.

DISADVANTAGES OF AUTOMATIC TRANSMISSION SYSTEM

1. High cost.
2. Complicated design.
3. Possibility for oil leakage.

Over Drive


CARRIER
FREE WHEEL CLUTCH
SUN GEAR
OUTPUT SHAFT
INPUT SHAFT (GEAR BOX OUTPUT SHAFT)
RING

ADVANTAGES OF OVER DRIVE

1. This device permits the engine to operate at only about 70% of the propeller shaft speed when the car is operating in the higher speed ranges. i.e., over drive engine speed about 30%.

2. Because the engine is not required to turn over fast at high car speed, the use of over drive reduces engine wear and vibration and saves gasoline.

DRAWBACKS OF OVER DRIVE

1. In descending long steep hills where the braking effect of the engine would be lost due to slip in ORC. To avoid over drive should be locked.

2. The driving force available at the wheels is less in case of vehicles with over-drive.