

## Notes

### AGE

- 19yrs to hold classes 1,2,4
  - class 4 allows you to drive taxi, limo, ambulance or bus with less than 25 seats, any motor vehicle or combo of vehicles in class 5
  - need 4, 5 with heavy trailer endorsement or 1,2,3 to tow trailer that weighs more than 4600kg
  - class 1 can drive any vehicle with three or more axles and taxi
- 18yrs can hold class 3
  - trucks with more than two axles
    - eg. dump trucks, tow trucks

special vehicle = no more than 10 seats and public transportation for disabled people

special activity bus =

- operated for a school
- does not run on set schedule
- used for purpose for it was manufactured

get commercial license =

- driving record with less than four tickets that carry penalty points in last two years
- not owe any motor vehicle related fines to ICBC
- already hold 5 or 6 license
  - take vision test
  - good physical health
  - knowledge test and pre-trip inspection of vehicle

once get commercial license =

- checked periodically by company that employ you as driver

## Braking

- friction converts the energy of motion to heat energy
- total stopping time
  - reaction +brake lag + braking time

## smooth braking

- brake early spread braking load
- safe following distance 3 to 5 seconds min
- see safe distance ahead when travel speed
  - just before coming full stop, reduce pressure you put on pedal
- twice weight and twice speed of that car requires eight times more stopping power to stop same distance
- icy roads = light pressure on brakes
  - this will prevent wheels from locking up
  - prevent skidding
  - help you control vehicle
- Brake fade
  - a temporary and sudden reduction in braking power
    - caused by heat in system from braking repeatedly under high load or speed
      - what will happen?
        - vehicle takes longer to stop
        - stop working because they overheat
        - vehicle may not stop at all

## downshift

- travelling down steep hill

- downshift before heading down hill
  - downshift = going to lower gear
- Use a gear that is not higher than the gear you would use to go up that hill
- Use an engine or driveline retarder in addition to your main service brakes
  - Engine retarder brakes are used in many heavy trucks

### Downgrade

- steep downward slope
- highest brake temp. occur when braking from highway speeds on long downgrades or repeated brakes without cooling time between applications
- never shift to higher gear on downgrade unless speed on the grade can be controlled with retarding device or engine compression

### Retarder

- more efficient at higher engine rpm and lower vehicle speed
- provide auxiliary slowing of vehicle
- engine retarders = engine brakes help save main braking system for emergency stopping

### RPM = revolutions per minute

- is a unit of rotational speed or rotational frequency for rotating machines
  - a. The number of complete turns the crankshaft makes in one minute.
  - b. Measured by your tachometer.
  - c. An important factor in governing how fast you can go in a given gear.
    - you should shift gears up when the tachometer is

around “3” or 3,000 RPMs; shift down when the tachometer is around “1” or 1,000 RPMs

- tachometer indicates engine speed not actual travelling speed
  - tachometer helps you decide when to change gears

combination-unit vehicle

- towing, pushing another thing
  - braking forcefully
    - wheels may lock up
    - vehicle to jack-knife or skid
      - jack-knife - folds in on itself at the point of separation
- brakes, tires, and suspension of a combination vehicle works best when vehicle is legally loaded and property distributed among axles

Air Brakes

- why use these?
  - much greater force than hydraulic braking system
    - more tolerant to small leaks
- compressed air
  - squeezed into smaller space
    - increase air's resistance
      - resistance creates pressure
        - can be converted to mechanical force to apply on brake
          - eg. 10p.s.i = 10pounds on 1 square inch surface of plug

Parts of the air brake

- compressor = pump air
- governor = control compressor

- air lines = allow air to flow between air brake system components
- reservoir = store compressed air
- brake pedal = foot valve = applies brake by directing compressed air from reservoir to brake
- foundation brake
- 

Who usually issue chauffeurs permits?

- municipal police
  - taxi and limousine drivers need for some cities

ABS anti-lock braking system

- mandatory on trucks and buses over 4560kg
- mandatory on all commercial trailers with air brakes
- helps prevent overbearing on slippery surface
- doesn't allow u to drive faster or stop sooner
- ABS can help prevent wheel lock-up on surfaces where conventional brakes usually lock up
- can brake hard without skidding or losing steering control
- can prevent jack-knifing

How to use ABS

- apply firm hard continuous pressure on brake until vehicle stops
- don't pump the brakes, it turns the system on and off
- don't be alarmed by braking noise or pedal movement or shudder
- tractor and trailer both have ABS?
  - if not all have ABS then apply brake as you were operating a combination without ABS

## ATC automatic traction control

- optional addition to an ABS system
  - detect loss of drive wheel traction on slippery road
    - will apply brake if drive wheel spins transferring power to opposite side
    - in extreme slippery conditions
      - ATC will reduce engine power allow wheels to regain traction

## Water on roadways

- water can reduce brake efficiency
- cover brake with foot as approach water
- place slight drag aka apply slight constant pressure on brake when driving through water
  - this reduces amount of water entering brake drums and shoes
- reduce speed before driving through large pools of water on roadway
- test brakes by applying slight pressure after driving through water
  - do this for a short distance to dry out brakes

## Runaway lanes

- these are located at side of road on some downhill grade, so just before downhill grade
  - downhill grade (downgrade, aka decline )
- safety measure when you lose braking power
  - only used for control speed or stop

## Following distance

- ideal conditions
  - taxi, ambulance or van 2 second rule for safe rolling distance

- use checkpoint method
- if filling motorcycle, leave more space because they can stop quickly
- lengthen distance when conditions are poor
- ideal condition
  - bus, truck or heavy vehicle 5 second following distance

#### blind spots of a trailer truck

- longer the hood of vehicle the longer the blind spot
- higher seat option can hide car alongside u

Traffic lights are synchronized on some streets, so by driving at the posted speed you'll make every green light.

#### Tailgaters

- driving large commercial vehicle on highway = leave at least 60meter from other vehicle
  - buses, trucks, large vehicles never be less than 5 seconds behind the vehicle ahead at highway speed
- travel slowly or going on hill up and down use right lane
- allow vehicles to pass if only one-lane road if u going slower or hill
- use four-way flasher when driving on hill
- Vehicles, machinery or combinations of vehicles that travel at less than 40 km/h should display a red triangle slow moving vehicle sign.

#### Danger Zones

- section of road a vehicle travels through before it can stop
- speed increase danger zone increases
  - not ideal conditions increase danger zone
- reduce danger zone when u cover brake pedal with foot any time you see hazard developing eg. seeing intersection

## Wheelbase

- distance between front wheel and rear
  - turning radius for a vehicle
    - room needed for vehicle to make turn
    - different for front and rear tires
    - dependent on size of vehicle
      - inside wheel turns more than outside wheel

## Off track

- difference in path between front and rear wheels
- off track is bigger if bigger distance between front and rear wheels aka bigger wheelbase
  - depends on
    - wheelbase
    - location of pivot points between truck and trailer
    - longer the draw bar length or farther back the fifth wheel is mounted = greater offtrack

## Curves and turns

- enter at speed that doesn't require you to brake while in the curve
- enter at speed that allows you to apply gradual power while in curve
  - When you go around a curve, inertia tries to keep you going in a straight line.
  - Traction is the grip your tires have on the road.
    - turn left = vehicle head should be close to right edge
    - turn right = head be close to middle line

## Bus (forward control vehicle)

- turning right
  - turn wheel when see curb line of street you are entering



through front entrance door

- turn left
  - If there are two turning lanes, you should turn from the right-hand turn lane as this lane will better accommodate your vehicle's off tracking.

### Backing up

- avoid backing up whenever possible
- plan ahead to minimize distance
- use person to guide you when possible , if can't then get off vehicle to check everything clear
- sound horn once every vehicle length travelled by backing
- back vehicle out of traffic to parking spot, avoid backing into traffic
  - back into view side aka close to your door side
- crash
  - almost always only driver's fault, even if there is person to guide

### Parking

- if with curb and uphill
  - the normal wheel turn (left toward centre of road)
- if no curb and uphill
  - turn wheel right toward edge of roadway
- if combination vehicle on uphill with or without curb always turn wheel left toward centre of road
- downgrade is same for all = turn wheel to the right toward edge of roadway

### Progressing shifting

- shifting gear
  - higher higher rpm = higher gear needed
    - Only use enough torque to get the vehicle moving and

then shift into the next higher gear.

- peak torque is found at lower engine speed (lower rpm of 1500rpm) than peak horsepower (2000rpm)
  - vehicle should operate between engine's peak torque and horsepower levels
    - torque - ability of engine to move vehicle
    - horsepower - used to develop speed
    - this called normal operating rpm range of engine
      - to keep within normal operation rpm range we must transmission of shifts
- progressive shifting = new vehicles with high torque engines  
Progressive shifting vs Standard rpm split shifting method
- which method depends on vehicle
  - standard rpm
    - accelerate to 2000rpm aka peak horsepower, then double clutch, then allow engine speed to go to peak torque 1500rpm eg. and then upshift
      - double clutch = depressing clutch pedal twice in process of moving from one gear to another 45
- At any given speed, the engine is developing both torque and horsepower
  - peak torque below peak horsepower
    - operating between means normal operating rpm range of engine
      - to keep within normal range need to shift gears accordingly
        - use the tachometer to do so
          - tachometer shows engine speed
            - thus help decide when to shift gear

### Shifting gear

- upshift - change to higher gear, when you want to go faster

## lugging

- lugging occurs when engine is operated below peak torque
  - choosing gear that's too high (rpm gonna be too low)
    - RPM vs Engine
      - higher RPM the more power engine can produce
    - feel: car going to shake back and forth

## Governor

- speed controller
- allows you to start vehicle without using throttle
- regulates amount of fuel going into engine
  - gasoline vehicle no governor how to upshift
    - use enough throttle to start the vehicle moving
    - accelerate = shift next gear
    - allow engine to develop more power before each shift
    - As you complete each shift, engage the clutch smoothly, and engage the throttle at the same time

## Gear

- appropriate gear for entering curve
  - is one that allows you to complete your progression around curve while using engine power throughout

## intersection

- when approaching
  - position vehicle in necessary lane well before intersection
  - signal about 1/2 a block from intersection
  - avoid changing lanes or passing other

## Alley

- max speed

- 20km/h
- stop vehicle before driving across sidewalk

## Railway

- controlled railways have all types of control: flag person, stop sign, crossing gate, electric or mechanical signalling device
  - stop 5-15m away from crossing
  - look both ways and listen
    - open window to hear better
      - move forward when safe don't shift gears when crossing
- uncontrolled
  - school buses carrying kid still need to stop
  - buses with passenger
  - vehicle transporting explosives, poison, combustibles
- humpback railway crossing
  - hump has a
- rural road railway crossing
  - extra attention
    - approach grades may be steeper
    - snow banks higher
    - brush can affect visibility
    - fewer automated warning system
    - more humpback crossing
- do not shift gears when crossing railroad tracks
  - need min 15m away parking from railroad crossing

## School bus

- test brakes everyday
- any defects = no transport passengers
- refuel with no passengers
- rental bus must comply with MVA motor vehicle act and

## regulations

- need fire extinguisher
- FA kit
- flares or flags
  - more than 12 seats must have emergency exit door or window
  - "school bus" signs must have 2
    - front and rear, black on yellow, 20cm high
      - need wash floor once a week
- mirrors
  - required to have 4 mirrors
    - 2 rear view
    - 1 entrance
    - 1 convex front
- driving large commercial vehicle on highway = leave at least 60meter from other vehicle
  - but also bus on normal road also 60m each direction
    - need to leave 3m of road on left side of bus

## Warning devices

- who needs to carry
  - vehicles that seats more than 10
    - commercial vehicles with width more than 2.3m
    - load width more than 2.3m

## Emergency vehicle

- equipped with flashing lights or sirens
  - we must yield when flashing or siren
    - drive to curb of roadway
      - stop vehicle clear of intersection
        - remain stopped until emergency vehicle passed
          - listen for multiple emergency vehicles

## NSC National safety code

- which vehicles included in the NSC program?
  - commercial vehicle more than 5000kg
    - vehicle operating under passenger transport act
      - commercial vehicle with capacity of more than 10 people (plus driver)

## slow vehicle sign

- must display this sign if max speed is 40km/h

## high beam

- switch to low beam when within 150m from another vehicle
- illuminates 100m
- don't flash light at people to warn them

## Tires

- can overheat, burst, and flex more than should if over- or under inflated
  - underinflated
    - risk of hydroplaning
      - tires water skiing on road
    - more tire flex
    - excess wear on outer edge of tread
  - overinflated
    - less tread surface
      - less traction
        - tire pressure should be checked when tires are cool
        - if tire warm and you check/reduce the air pressure
        - you may cause tire to generate more heat

- tread damage, including cuts, cracks or snags
- head restraint is at least as high as the top of your head, and the head restraint is less (LESS) than 10 cm from the back of your head
- any Blood alcohol content with over 0.05% is illegal
  - if crash with impair driving due
    - increased cost of insurance
    - pay for own repairs and victim's

### inspection

- During the inspection, tell your examiner what you are checking for and how you know if each part of your vehicle is in good working order. You'll get a trip inspection report to fill out as part of your pre-trip inspection. You can find more about pre-trip inspections and pre-trip inspection tests in chapter 10, vehicle and air brake pre-trip inspections.
  - Daily written inspection reports must be made by the drivers of which vehicles?
    - buses, trucks with license GVW greater than 14600 kg and combination vehicle with 8200kg
- noticed oil or grease leaks from hub of wheel
  - should:
    - check brake drum area to see if there's oil or grease on brake pad
- metal or paint flakes around nut
  - indicate:
    - wheel movement
      - this is disk wheel problem
- changing new tire

- stop after short while to check if wheel nuts are tight

## equipment

- Every commercial vehicle that has a seating capacity of more than 10 occupants must have
  - FA kit
  - one spare tire
  - one fire extinguisher

## On-duty times

- include
  - inspecting or using vehicle
  - waiting along route
  - not resting in sleeper berth and traveling as one of two drivers
  - inspecting and checking load
  - waiting for vehicle or load to be checked and weighed
    - travelling as a passenger to a destination where you'll start driving — this qualifies as on-duty time when two conditions apply:
      - 1. the carrier requests you make the trip, and
      - 2. you didn't have eight consecutive hours of off-duty time immediately
        - aka when boss calls u, it on-duty. if u didn't get rest it on-duty
- allowed to drive max 13hrs a day
- no driving after 14hrs on duty

## off-duty time

- include spend time in sleeper berth



- must take 10hr off every day
  - 2 of the 10hr must not be with the other 8hrs
  - must take 1day off of 14days work so 24hrs consecutive
    - can't work all 7 days then
- Cycles
  - Cycle 1 (7days)
    - 70hrs in 7 days = no more driving
      - reset cycle = taking 36 consecutive hrs off duty
  - Cycle 2 (14days)
    - 120hrs in 14 days = no more driving
      - reset cycle = taking 72 consecutive hrs off duty
        - after working 120hrs in a 14 day cycle (cycle 2), drivers must take 24 hours of off-duty time before working 70 hours of on-duty time

#### work shift

- 8 consecutive hours = reset work shift
- after 16hrs of time u need to rest 8 consecutive hours (off-duty) \* 133
  - therefore, work shift defined as the time between two 8 consecutive hour off-duty rest

#### highway

- letting passengers on and off
  - must park in place that allows others to see from 85m front and back

#### Daily log

- need
  - updated to last duty status
  - copies of it for work cycle, previous 7 or 14day cycle

- supporting docs issued during trips
  - fuel receipts and accommodation receipts for expenses incurred along the route.
- odometer at beginning and end of day
  - All trip inspection reports must be given to the carrier within 20 days.
    - every 240km do en route inspection of vehicle

#### Who isn't required LOGBOOK?

- you operate a commercial vehicle within a radius of 160 km of the home terminal
- you return to the home terminal each day to begin a minimum of eight consecutive hours of off-duty time

#### Who is required LOGBOOK?

- vehicles
  - sits more than 10
    - truck greater than 14600kg
      - truck towing trailer greater than 8200kg

#### Class 4 restricted

- pre-trip inspection 225
  - take 15min max to do it
    - 1. under hood
    - 2. in passenger compartment
    - 3. circle check
    - 4. brake response tests

#### Pre-hill inspections

- check
  - compressor maintains full reservoir pressure
  - no audible air leaks
  - glad hands and airlines are secure

- brake drums and hubs ain't overheated
- pushrod travel is within limits
- if hydraulic brakes
  - check adequate pedal reserve
  - brake drums aren't over-heated
  - no hydraulic fluid leaks