

## 4. Getting to know your tractor

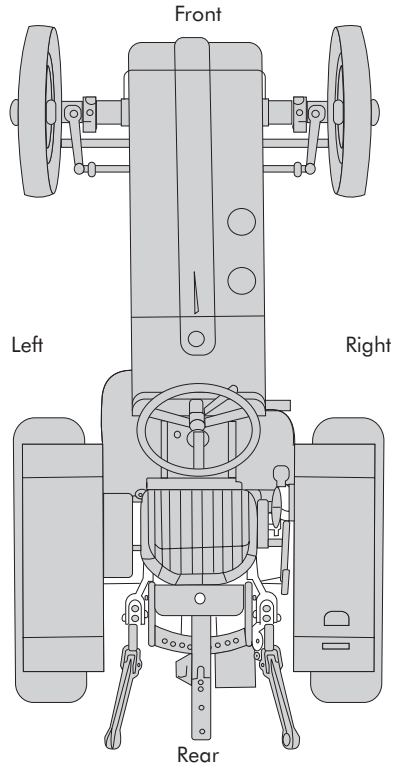


Fig. 4.0

- Throughout this manual, the use of the terms left, right, front and rear must be understood (fig. 4.0).
- When spare parts are required to be ordered, always specify the tractor & engine serial numbers that appears on crankcase RH side and battery box (fig. 4.1). This will facilitate faster delivery & help ensure that the correct part is received.

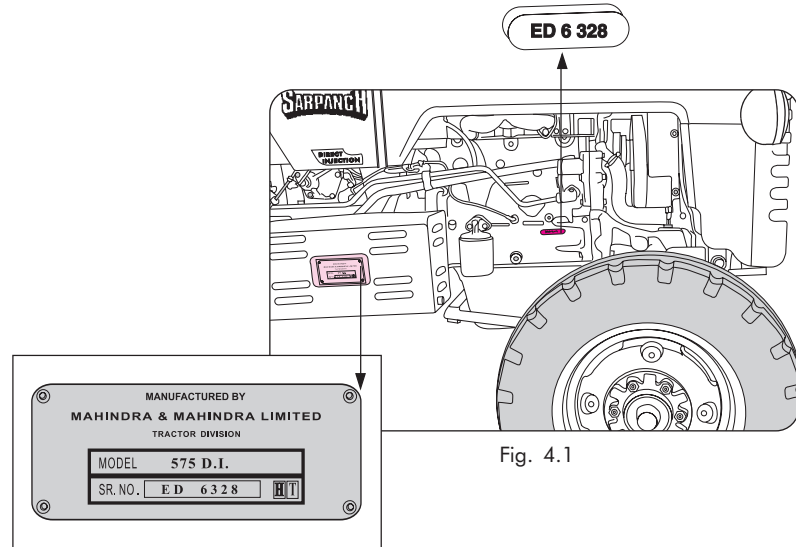
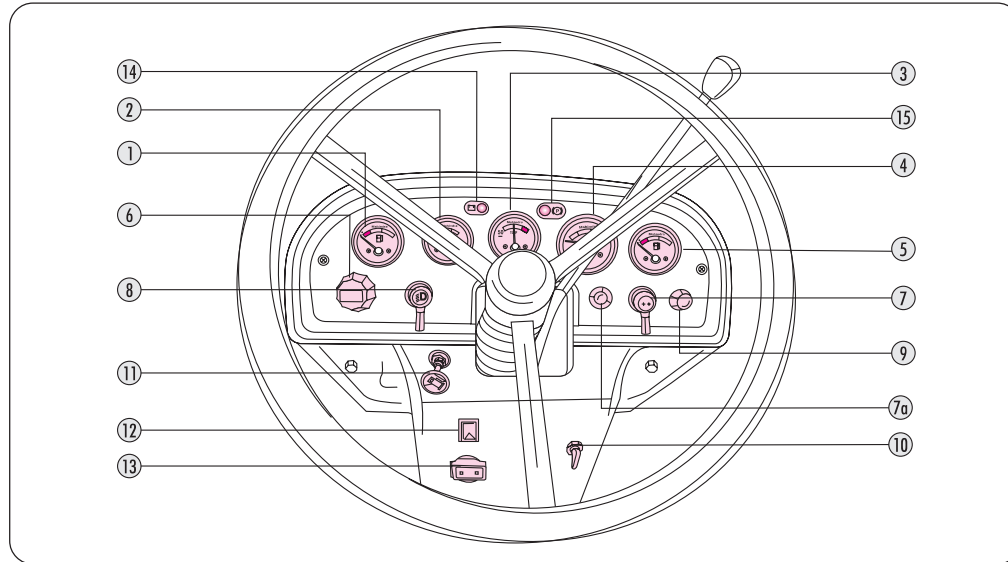


Fig. 4.1

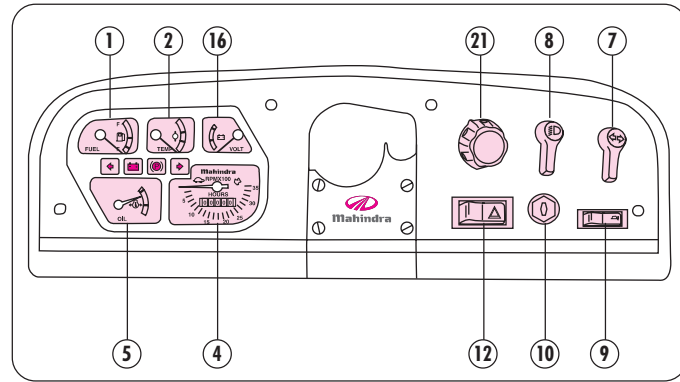
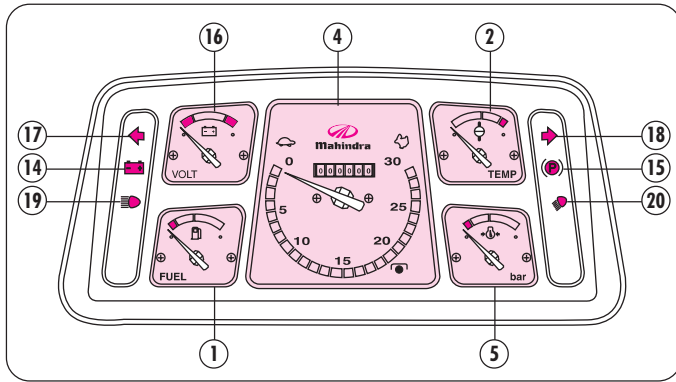
Model & Sr. No. Plate

## Instruments & controls

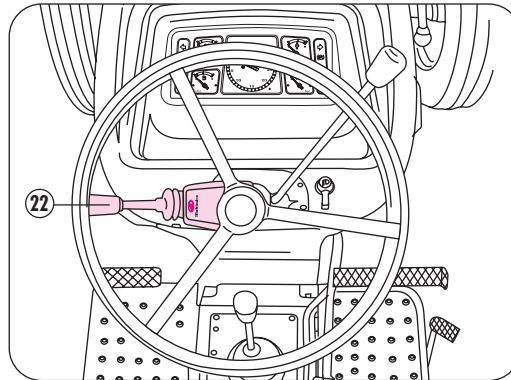
Three types of instrument panels are provided on different models of Mahindra tractors.



- |                            |                          |                                |
|----------------------------|--------------------------|--------------------------------|
| 1. Fuel level gauge        | 6. Light switch          | 10. Starter switch             |
| 2. Water temperature gauge | 7. Side indicator switch | 11. Fuel shut off control knob |
| 3. Ammeter                 | 7a. Signal indicator     | 12. Hazard switch              |
| 4. R.P.M. cum hour meter   | 8. Plough lamp switch    | 13. Fuse box                   |
| 5. Oil pressure gauge      | 9. Horn push button      | 14. Battery indicator          |
|                            |                          | 15. Parking brake indicator    |

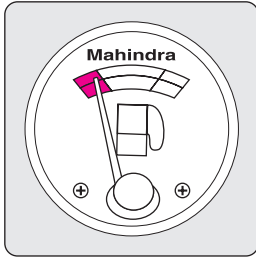


1. Fuel level gauge
2. Water temperature gauge
4. R.P.M. cum hour meter
5. Oil pressure gauge
14. Battery indicator
15. Parking brake indicator
16. Voltmeter
17. LH turn signal indicator light
18. RH turn signal indicator light
19. Main beam "ON/OFF" indicator light
20. Plough lamp "ON" indicator light



1. Fuel level gauge
2. Water temperature gauge
4. R.P.M. cum hour meter
5. Oil pressure gauge
7. Side indicator switch
8. Plough lamp switch
9. Horn push button
10. Starter switch
12. Hazard switch
16. Voltmeter
21. Multiposition light switch
22. Combination switch

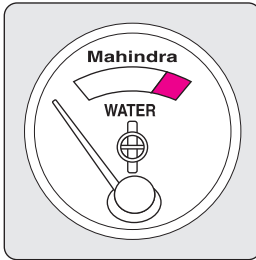
**NOTE :** Some of the gauges are not part of standard accessories.



1. **Fuel level gauge** : The needle of this instrument indicates the approximate amount of fuel in the tank. Top up fuel in the tank whenever the needle registers in the red zone.



Do not allow the fuel in the tank to go below half of the red zone, as air may get sucked in the system, causing the engine to malfunction / airlock.

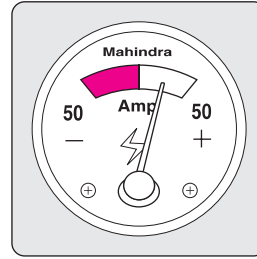


2. **Water temperature gauge** : The needle of this instrument indicates engine coolant temperature. The needle should register in the green zone.

If the needle registers in the red zone, the engine is overheating. **Switch off the engine**, allow it to cool down and determine the source of the problem.

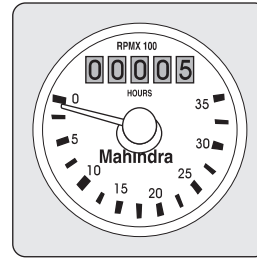


Do not restart the engine until the problem has been eliminated



3. **Ammeter** : This instrument indicates the rate at which the battery is being charged / discharged, with the engine running above low idle.

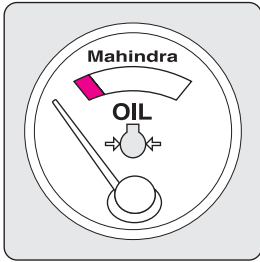
If the needle registers red zone, stop the tractor. Check the fan / alternator drive belt for looseness or breakage. If the belt is o.k, then there is a problem somewhere in the charging system. Have the system checked by the nearest M & M dealer or its authorised service centre



4. **R.P.M cum hour meter** : This instrument records the running of engine in hours & the needle of this meter shows the speed of the engine.



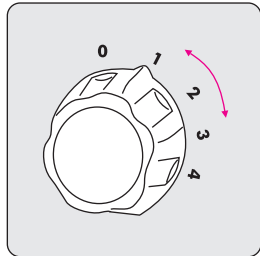
The hour meter cable is sealed at M & M plant. Please do not tamper with this seal as it will invalidate the warranty on tractor.



**5. Oil pressure gauge :** This instrument indicates the pressure of lubricating oil circulating inside the engine.

With the engine running, the needle should **not** register in the red zone. If the needle registers in the red zone, stop immediately. Switch off the engine & check the engine oil level.

- If oil level is low, top up and check the gauge for correct pressure.
- If the oil level is correct, do not start the engine. Get it checked by the nearest M & M dealer or its authorised service centre

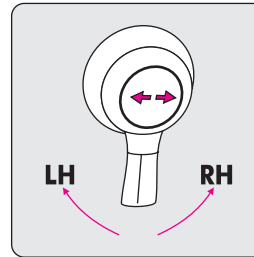


**6. Light switch :** This operates only when starter switch is in on position. It is a four position light switch.

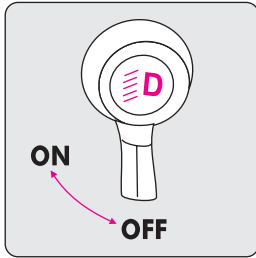
- 0 position – all lamps are in off condition.
- 1 position – operates tail lamps, registration plate lamp, front signal lamps & instrument's/gauge lamps.
- 2 position – keeps all the lights as

mentioned in position 1 'on' and operates the headlight in dipped beam.

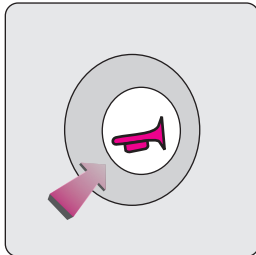
- 3 position – keep all the lights as mentioned in position 1 'on' and operates the headlight in main beam.
- 4 position – puts "off" all the lights as mentioned in position 1, and operates only the headlight in main beam.



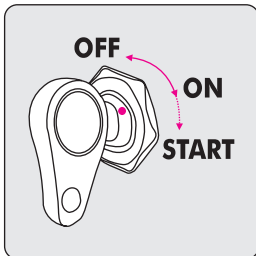
**7. Side indicator switch :** This switch operates left & right hand side indicators, which help to give signal to other road users.



8. **Plough lamp switch** : This switch operates plough lamp.



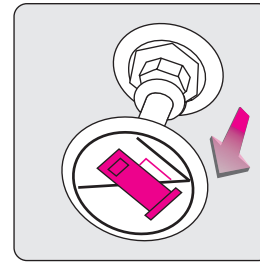
9. **Horn push button** : This button activates the horn when pressed.



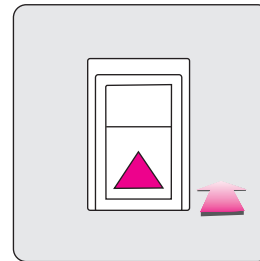
10. **Starter switch** : Moving the key in clockwise direction brings electrical system to 'on' position. Further movement of key against spring force will crank the engine. Release the starter key as soon as the engine starts.



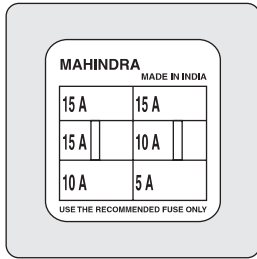
Always ensure that the transmission is in neutral when the engine is cranked to prevent accidental motion of the tractor.



11. **Fuel shut off control knob** : Pulling out the fuel shut off control knob will discontinue the fuel supply to the engine thereby stopping the engine.



12. **Hazard switch** : Press it to operate the side indicator lamps of front & rear, in case of emergency or breakdown.

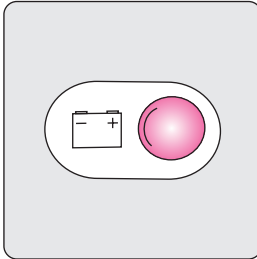


**13. Fuse box :** It contains fuses, which operate different electrical systems. Fuse identification is provided on the fusebox cover.

Spare fuses are provided in the cover. Always use fuse of correct amperes.

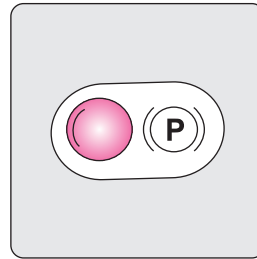


Never use thick strands of wire as fuse. This may cause wiring harness to burn causing severe fire.



**14. Battery indicator :** Battery indicator light will glow when the key is rotated in clockwise direction and will go 'OFF' as soon as the engine is started.

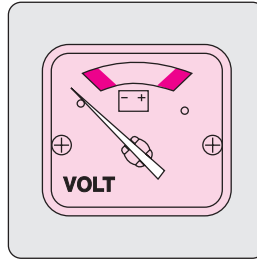
In case the light doesn't go off, check the fan / alternator drive belt for looseness or breakage. If the belt is o.k, then there is a problem somewhere in the charging system. Have the system checked by the nearest M & M dealer or its authorised service centre



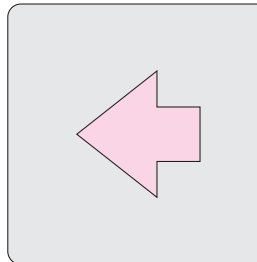
**15. Parking brake indicator :** This light will glow when parking brake is applied. Always ensure that the parking brake is disengaged when the tractor is driven.



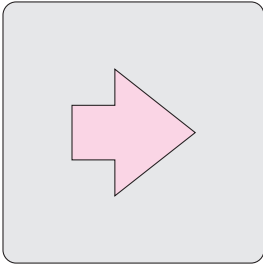
Driving the tractor with the parking brake on will result in rapid wear of brake linings / brake drum and may result in malfunction of brakes.



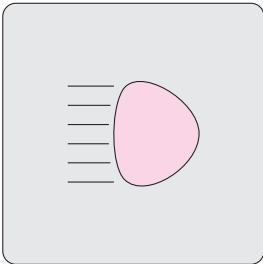
**16. Voltmeter :** This gauge indicates the battery voltage. If the needle shows red zone please get it checked at your nearest Mahindra Authorised Service Centre.



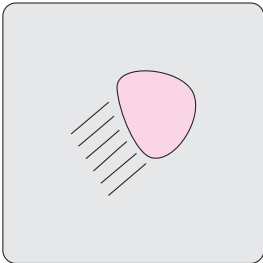
**17. LH turn signal indicator light :** The LH signal light on the instrument cluster will flash when the combination switch lever (22) is moved in counter clockwise direction.



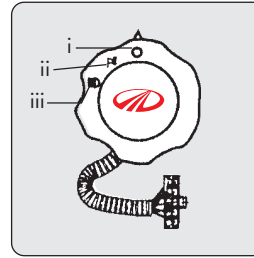
**18. RH turn signal indicator light :**  
The RH signal light on the instrument cluster will flash when the combination switch lever (22) is moved in clockwise direction.



**19. Main beam "ON/OFF" indicator light :** When the light switch (21) is in "ON" position and combination lever (22) is moved downwards main beams becomes operational and it is indicated by the glowing of main beam indicator light on cluster.

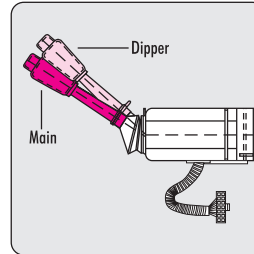


**20. Plow lamp "ON" indicator light :** When the rotary switch (8) for plough lamp is in "ON" position the plough lamp indicator light on the instrument cluster will glow.



**21. Multiposition light switch :** This light switch has three positions.

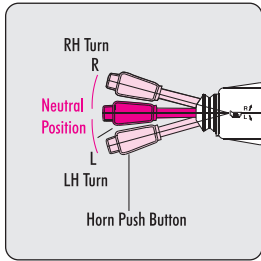
- i) Off
- ii) Parking lights + Instrument cluster lights
- iii) Head lights + Parking lights + Instrument cluster lights



**22. Combination switch :** Combination switch is mounted on LH side of steering column. It is a single lever switch performing 3 different operations.

- a) Hi-Low beam switch :
  - For operating high (main) beam the multiposition light switch (21) on the scuttle panel must be in third position and the combination switch lever in downward direction.
  - For operating low (dipper) beam the multiposition light switch on the scuttle panel must be in third position and the combination switch lever in upward direction.





b) Turn signal :

Moving the lever clockwise from neutral position will "ON" the RH indicator.

Moving the lever counter clockwise from neutral position will "ON" the LH indicator.

Turn signal light is operational in both movements of combination switch lever (upward & downward direction)

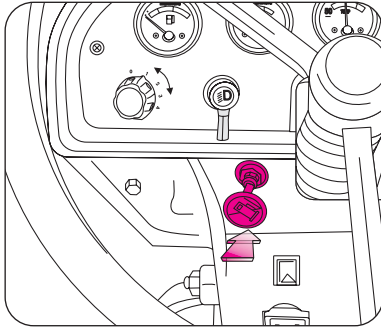
c) Horn :

Pressing the end knob inwards on the combination switch lever will activate horn.

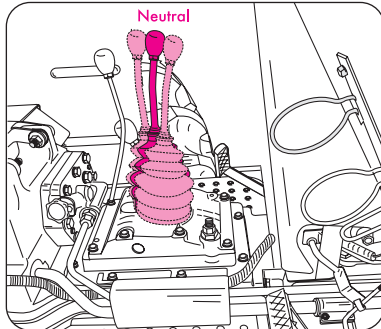
## ■ Operating the engine

- Check before you start

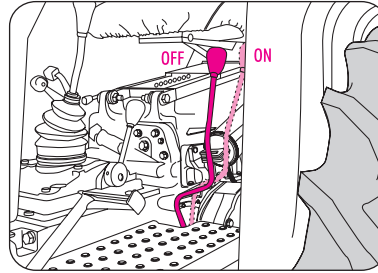
1. Make sure fuel shut off control knob is pushed in.



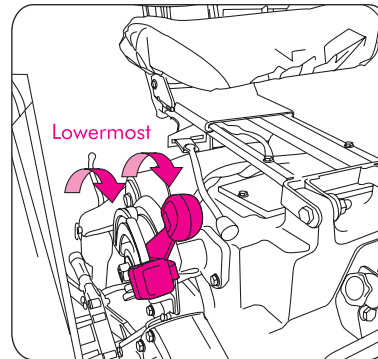
2. Gear shifter lever is in neutral position.



3. PTO is in off position.

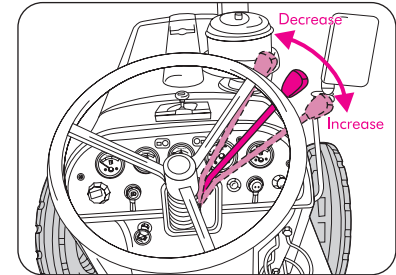


4. Hydraulic control levers are in lowermost position.

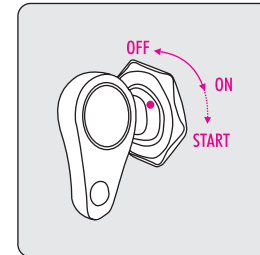


## • Operating procedure

1. Set the governor control lever to about half way.

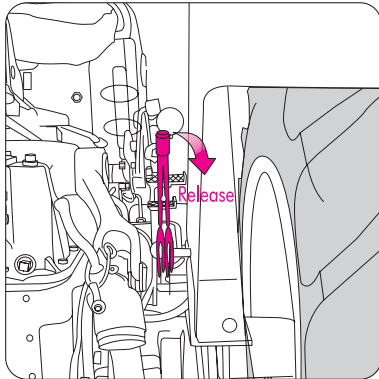


2. Insert the key into the key switch and turn it on, it will start the electrical system



on. Battery indicator & brake lights will glow.

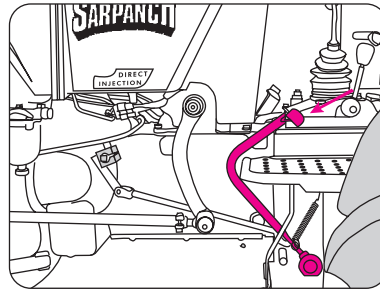
3. Further movement of the key against the spring force will crank the engine.
4. If the engine fails to start within 10 secs, turn off the key and wait for 30 secs. Then again attempt to crank the engine. To protect the battery and starter make sure that the starter is not continuously cranked for more than 30 secs.
5. Release the parking brake by depressing the brake pedal, the brake light will go off.



### ■ Operating the tractor :

After the engine has started as given in "operating the engine". (refer page 17)

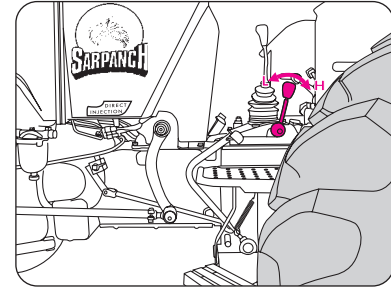
- a) Depress the clutch pedal. The clutch is disengaged when the clutch pedal is pressed down.



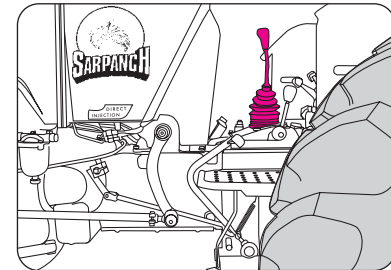
To prevent premature clutch wear

- Clutch pedal must be quickly disengaged and be slowly engaged.
- Avoid clutch pedal as foot rest, these reduces the performance of tractor & life of clutch.
- Select proper gear & engine speeds depending upon the type of the job.

- b) Select the high/low gear with the help of high/low selector.



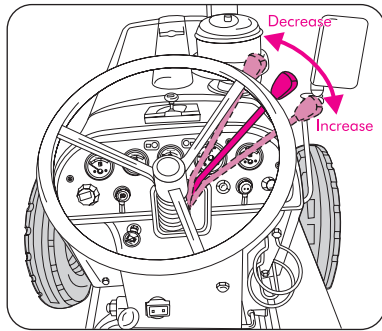
- c) Select the desired gear.  
4 forward & one reverse in high gear and 4 forward & one reverse in low gear. Thus a total of '10' speeds are possible.



## ■ Accelerate the engine

Engine can be accelerated or decelerated as follows :

- Hand throttle lever : Use of this lever increases or decreases the engine speed. Hand throttle is to be used while operating the tractor in the field.

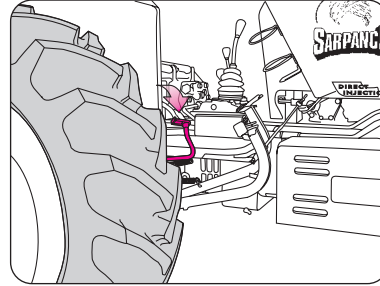


## ! CAUTION

Do not use hand throttle while driving on road.

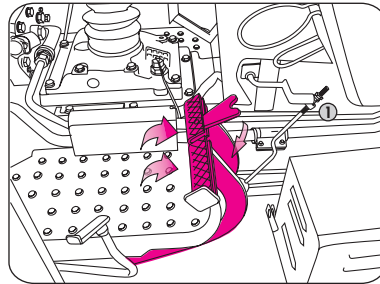
- Foot throttle : Use the foot throttle when travelling on road. Press down on it for higher speed. When using foot

throttle, keep the hand throttle in low idling position.



## ■ Use of brakes

There are two individual foot brake pedals for operating the left and right brakes, to stop the individual wheels.



1. Latch

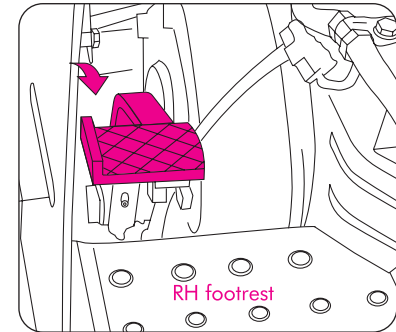
## ! DANGER

Always latch the brake pedals together when driving on the highway and in high gear.

These individual brakes facilitate sharp turning during the field operations.

## ■ Differential lock

It is operated by right foot heel pressure. Operating the differential lock causes equal power to be transmitted to both the wheels, which helps in overcoming obstacles. Without the use of differential lock, the wheel spins completely uselessly

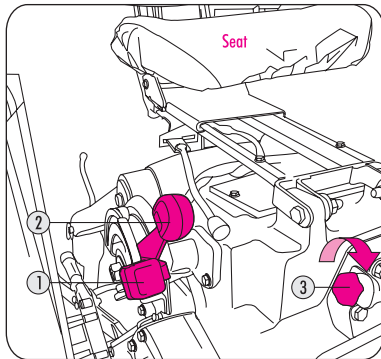


digging itself into the soil while the other stands idle and the tractor is not able to overcome the obstacles or if one tyre gets itself into soft soil.

## ■ Use of hydraulics

The tractor is fitted with 'live' hydraulics system i.e hydraulic starts as soon as the engine is cranked. Thus, it is able to operate the 3 point linkage or external tappings, independent of any clutch movement when changing gear or operating the power take off.

It consists of,

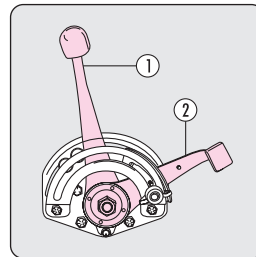


1. Position control lever  
Long lever with a black knob
2. Draft control lever  
Shorter lever with a orange knob
3. Isolating valve

### 1. Position control lever (P.C.)

P. C. lever is used for following.

- Lifting and lowering the implements on turns.
- Hitching the implement / 2 wheeled trailer.
- Setting the height of out of ground implements. A wing nut with stopper is provided for this setting.
- Operating tipping trailer or other auxilliary application.



### 2. Draft control lever (D.C.)

D.C. lever is used to set the depth of the soil engaging implement. The forward movement provides more depth and rearward movement provides shallow depth.



This lever should not be used for lifting the implement out of the ground/during turn/during transportation and also during hitching the implement.

### 3. Isolating valve

This valve is used for

- a) Operating remote cylinders
- b) Transporting mounted implements at longer distance.

Isolating valve has a lock to prevent inadvertent use when not required.

#### a) Remote cylinders

- Move the draft control lever to the front of the quadrant and lock the sector.
- Move the position control stop screw back to the upper limit stop lock it and then move the position control lever back to the stop screw.

- Close the isolating valve without moving the control levers. This is the hold position for the remote cylinders.

**To extend the remote cylinders,**

- Push the control lever out from the quadrant clear of the stop screw, then move it back to the upper limit stop. As soon as the cylinders are extended, return the PC lever to the hold position.

**To retract the remote cylinders,**

- Push the PC lever forward from the hold position.



**CARE**

**Never move the position control lever beyond the upper limit stop.**

**b) Transporting mounted implements**

- Move PC lever to fully lift the implement.
- Remove isolating valve lock.
- Close isolating valve.
- Move PC lever towards fully forward position.



**CARE**

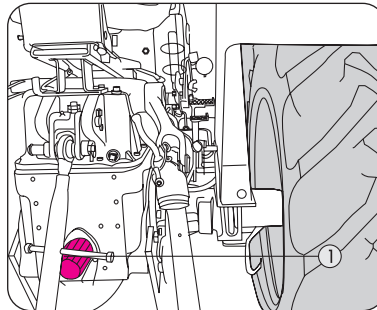
- Always keep the isolating valve fully closed or fully open.
- Keep safety latch locked when isolating valve is not in use.
- Keep PC/DC lever fully down during transportation of implement.

**■ Power take off**

**Type :** Rear mounted, 6 splines

**Speed :** Constant running 540 r.p.m.

Standard rear power take off is a splined shaft and is engaged & disengaged by P.T.O. lever.



1. PTO Shaft

**Operation**

- Move the governor control lever to the low idle position
- Depress the clutch pedal fully. Shift high / low selector lever forward to low range. Keep clutch pedal depressed. Engage the PTO shaft moving the lever to the rearward position.
- Engage the desired tractor gear (this does not apply if the tractor is to remain stationary)
- Move governor control lever to obtain required power and speed of PTO shaft.
- Release the clutch pedal.

**■ Dual clutch & constant running P.T.O**

Constant running with dual clutch is offered as an optional feature on "mahindra tractors". This has separate clutch driven plates for tractor drive & P.T.O drive. Dual clutch facilitates P.T.O shaft to run even if tractor drive clutch is pressed.

- First stage of clutch pedal travel disconnects the tractor wheel drive. (P.T.O. keeps running)
- Second stage of clutch pedal travel disconnects tractor wheel drive as well as P.T.O. drive.

### Operating instructions :

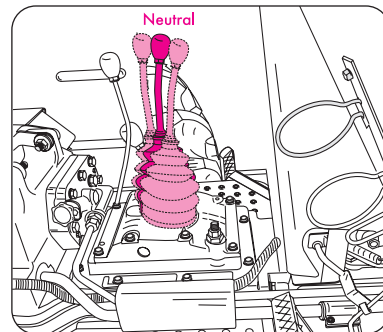
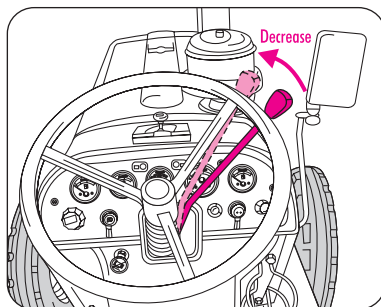
- Start the engine, ensuring that the selector lever is in off position.
- Press the clutch pedal up to the second stage and engage P.T.O. drive by moving the lever to P.T.O. On position. The P.T.O. will start getting the drive after releasing the pedal.

### **!** DANGER

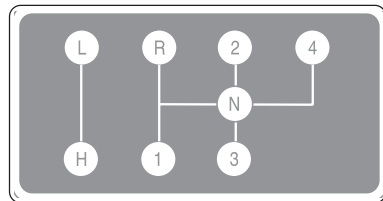
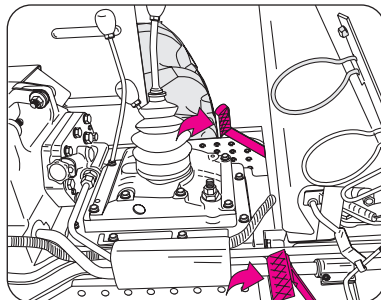
- Do not approach or work on the P.T.O shaft or equipment with the P.T.O in motion. Shut off the tractor engine and the P.T.O before working on the P.T.O.
- Do not operate in high gear range.

### ■ Stopping the engine & tractor

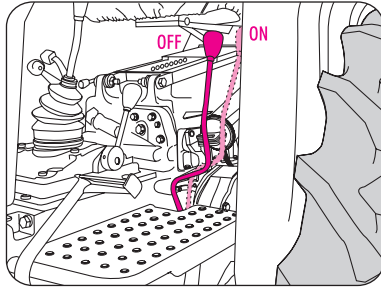
1. Reduce the engine speed by hand throttle.
3. Move the gear lever into neutral.



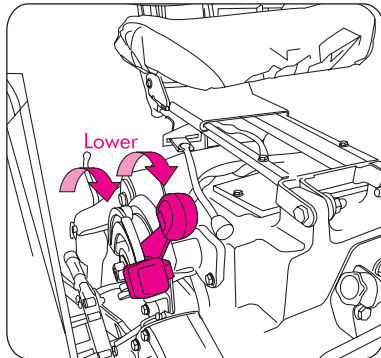
2. Apply foot brakes at the same time depressing the clutch pedal gradually till the tractor cease moving.



- Put PTO lever in off position and release clutch pedal.

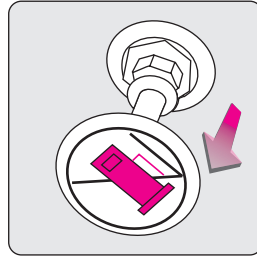


- Lower the implements

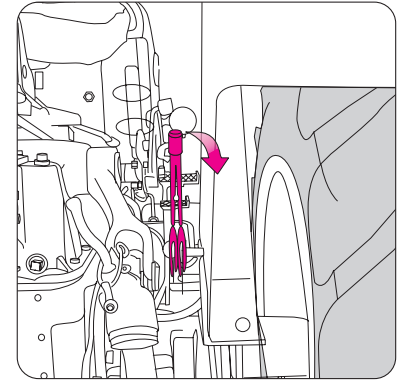


- Pull out the fuel shut off control rod fully so that engines stops.

Ensure that the fuel shut off control rod is fully pushed back after the engine has stopped.



- Apply parking brake.



- Switch off the starter switch.

