



BEYOND THE EXPECTED.™

DEFINITIONS

Gross Horsepower

This is the maximum engine horsepower output, measured without drive system load. High horsepower with large volume (measured in cubic inches) and low RPM's will result in better net horsepower and PTO horsepower output.

Net Horsepower

This horsepower measurement is based on the load when coupled to the drive system. The higher this horsepower reading, the better the PTO horsepower (or usable horsepower).

PTO Horsepower

This is the "usable" horsepower measurement at the PTO shaft's output (mid and rear). PTO horsepower is one of the most important horsepower measurements. It is what you power your tractor's attachments with, hence the term "usable horsepower".

Torque

Torque is the ability of the tractor's drive wheels to turn. It is usually measured in foot-pounds (ft-lbs). Tractors with high horsepower but low torque generally struggle under load, consume more fuel and experience higher operating temperatures. Tractors with higher torque consume less fuel, operate at lower temperatures and often carry a lower cost to maintain.

Reserve Torque

This is the single most important measurement of the engine's performance. It is the measurement of sustained torque under a working load. It is important to note that you could have engines of equal horsepower and torque, but the engine that sustains a higher torque output under load (has higher reserve torque) will perform better and consume less fuel (greater efficiency).

Indirect Injection

In this combustion system, fuel is not injected directly into the engine. Instead, it has a pre-chamber in which fuel is heated and combustion begins. The fuel then travels through a small orifice into the combustion chamber for final combustion. The air charge enters the chamber at a higher volume and with greater pressure, creating a better fuel mixture. Cold-starting assist systems are necessary for cold-starting; pre-chamber fuel needs to be heated longer in cold weather, which sometimes makes it a little difficult to start.

Direct Injection

This combustion system delivers fuel directly into the combustion chamber under high pressure. The result is a more powerful explosion, which produces better horsepower and higher torque reserve. Direct injection creates better horsepower output, a more complete combustion and uses less fuel to produce the combustion. In addition, direct injection systems will start, unassisted, in temperatures as low as 23 degrees F (-5 degrees C). Put simply, direct injection produces better performance, is cleaner burning and is more efficient.

Auto Bleed System

Standard on all Cub Cadet Yanmar engines, the auto bleed system ensures that if you run the engine out of fuel, there is a vacuum bleed system that automatically bleeds the air out of the fuel system for fast, easy priming and a no-hassle restart.

Dual Gear-Driven Hydraulic Pumps with Open Center

Two gear-driven hydraulic pumps with open center are driven off the engine, which delivers smoother and more consistent power. This results in greater usable hydraulic power by allowing the operator to operate the power steering simultaneously with a front loader or any hydraulically powered attachment. This system is common on compact tractors and is included on the Ex Series.

Dual Hydraulic Pumps, Gear-Driven & Trochoid

In this system, the gear-driven pump is powered off of the transmission. This pump supplies the power steering, 3-point hitch and loader control valve. The second pump (the Trochoid pump) is run off the engine and is the charge pump for the hydrostatic transmission, which also supplies the Shift-On-The-Go® range control and hydraulic independent PTO. It is not common to have dual hydraulic pumps on a sub-compact, but this system is used on the Sc2400/Sc2450 to give more usable hydraulic power throughout the complete RPM range.

Transmission Driven PTO

Transmission driven PTOs operate only when the engine clutch is engaged. They stop whenever the clutch is disengaged (stopping tractor travel).

Live Continuous PTO

With a live continuous PTO, if you partially depress the clutch, the tractor will stop while the PTO continues to run. If you fully depress the clutch, the tractor and PTO will stop. This is achieved by a two-stage clutch.

Independent PTO

In this system, the PTO operation is independent of the transmission. There is no foot clutch required, so the PTO can be engaged on the go.

Sliding Gear Transmission

In this type of manual transmission, you have an input shaft (drive shaft) that runs continuously until the clutch is depressed. Once the clutch is depressed, the operator can select their gear range. When the clutch is released, the input shaft will power the output shaft (counter-shaft), then power is transferred to the final drive. The operator needs to come to a complete stop to shift gears.

Constant-Mesh (Collar Shift) Transmission

In this type of transmission, the input shaft and the output shaft are in constant mesh (contact) with each other. A claw clutch (collar) separately slides in combination with a spline on the shaft. Rotation is transmitted by sliding this clutch to engage the needed gears. This type of transmission spreads the workload over multiple shafts and multiple gears, which is more durable than a sliding-gear transmission that spreads the load over two shafts and two gears. The operator needs to come to a complete stop to shift gears.

Synchromesh Transmission

The transmission of this type has the same mechanism as the constant-mesh system, though it employs a conical friction clutch instead of a claw clutch. A conical friction clutch allows the gear being engaged to slow down to allow the clutch gear to engage under power for a smooth, quiet engagement. This type of transmission will allow the operator to shift on the go.

Power-Shift Transmission (Clutchless Operation)

The power-shift transmission is a series of gears that can be shifted without interrupting the flow of power. The gears are in constant mesh while four hydraulic clutches control the engagement for three forward and one reverse speed, allowing for clutchless operation. With this transmission you have no interruption of power between shifting.

Hydrostatic Transmission

This is intended to transfer power by hydraulic pressure. Hydraulic pumps set in motion the pressure and flow, which in turn gives motions to the hydraulic motor. The hydrostatic transmission has the following characteristics:

1. Stepless speed adjustments
2. One-lever speed and direction control
3. Suitable for constant speed operation
4. No clutch required for changing speed

Synchro Shuttle

A Synchro Shuttle allows the operator to shift a single lever for forward and reverse directional changes. A Synchro Shuttle requires the operator to use the clutch. This feature makes the operator more efficient, especially during operations such as loader work.

Hydro Shuttle

This feature found in gear transmissions allows you to shuttle from forward to reverse without using the clutch. When you flip the shuttle lever to the forward position, the forward clutch automatically engages and the reverse clutch automatically disengages. When you flip the lever into the reverse direction, the forward clutch automatically disengages and the reverse clutch automatically engages. This increases the life of the clutch and increases the productivity of the tractor.

Selectable Control Valve

Often referred to as the SCV, this valve has two separate hydraulic ports and is powered through the tractor's Power Beyond system. It is often operated by a joystick control. It allows for more than one motion command at a time (i.e., lifting the loader arms up and dumping the bucket at the same time).

Non Position Control (Inching Valve)

This type of 3-point lift only allows for the implement to be in three positions – all the way down, all the way up or in the middle. For example, suppose you want to attach your box scraper and put a nice finish grade on a yard. In order to do a good job, it is important to have finite control of the height of the box scraper. The problem is, you must manually return the control valve to neutral at the very instant the box scraper arrives at the correct height. What usually happens is that the box has already gone past where you want it to be before you can position the control valve into neutral.

Positive Position Control

This lift type includes feedback linkage. This linkage can be either internal or external, and serves to return the control valve (automatically) to the neutral state as soon as the lift arms reach the point selected by the relative position of the lift control lever. In effect, this allows for an infinite range of positions. In contrast, the non-position control type only has three positions, from all the way down, to all the way up. Positive position control is essential when regularly performing tasks that require precise, repeatable lift arm height control.

Power Beyond

The tractor's hydraulic fluid is continually circulating through the transmission and filter system. When a series of hydraulic lines with quick couplers are tapped into the Power Beyond system, it allows attachments with their own valves to plug in. This allows the attachment to have the hydraulic fluid circulating through its system and powering the attachment's control valve. Backhoes and loader valves are powered by this type of circuit.

Rear Remotes

On a tractor that features rear remotes, there are valve assemblies under the seat area or on the fender that are either connected by lines or mounted to a hydraulic port. Additional hydraulic lines are installed to these valves/ports and routed to the rear of the tractor. Quick couplers are installed on the end of these lines (depending on the valve design you could have one, two, or three pairs of couplers). These hydraulic lines, or rear remotes, are generally used to power the hydraulics of attachments that don't have their own valve assembly.

Ag Tires

These tires have an aggressive heavy-tread lug pattern (bars) and are designed to dig down into soft soil conditions to find the hard ground for traction.

Turf Tires

Turf tires are designed with a smooth, low-traction tread pattern. These tires also have lower ply walls for greater give, creating better ride and lower pounds per square inch and reducing compaction during turf maintenance.

Industrial Tires

Industrial tires were designed with a semi-aggressive bar tread design for traction on hard and soft surfaces. The walls are a heavy 6 to 8 ply, reducing wall give and allowing for better load control and handling of the tractor during loader operation. They are more puncture-resistant than standard tires and therefore better for construction site operations.

Galaxy® Turf Tires

Galaxy® turf tires were designed for low compaction and have heavier side walls. This allows for heavier equipment to be used on the rear of the tractor, like deep core plug aerators, without increasing soil compaction.

ATTACHMENT DEFINITIONS

Maximum Lift Capacity @ Pivot Pins

This is the maximum amount a tractor can lift. This measurement is taken at the arms where the bucket pins are located. The weight is calculated without the bucket, giving the gross weight a tractor can lift.

Maximum Lift Located @ 19.5" Forward

This is the measurement at 19.5 inches forward of the pins, and is the net weight or actual working capacity of the tractor. This measurement deducts the weight of the bucket and gives the actual weight the tractor can lift.

Breakout Force @ Pivot Pins

This measurement is taken from the pin locations where the bucket attaches. This is the straight rising action of the loader, under load, lifting material straight up without the bucket.

Breakout Force @ 19.5" Forward

This measurement is taken at 19.5 inches forward of the loader arm bucket pin holes. This is the dead lift power of the loader when raising the loader bucket (i.e., scooping dirt from a pile).

3-Point Lift @ Hitch Point

This measurement is taken where the attachments hitch to the lift arms. This rating is the gross amount a tractor can lift at the 3-point.

3-Point Lift @ 24" Behind

This measurement is calculated 24 inches behind the lift point (where attachments pin on), and is the net amount a tractor can lift at the 3-point.