

Types of Tractors

Types of Tractors – Study Notes

1. Overview

Tractors are versatile power units used in agriculture, construction, landscaping, and industrial tasks. Their designs vary to match specific operating conditions, power requirements, and attachment systems. Understanding the main categories helps you select the right machine for a job and appreciate the engineering trade-offs.

2. Classification by Power Source

Power Source	Typical Features	Common Uses	Examples
Diesel	High torque at low RPM, fuel efficient, robust engine	Field work, heavy-duty hauling, long-duration operations	John Deere 5E, Kubota M5
Petrol (Gasoline)	Lighter, quieter, lower initial cost	Small farms, hobby gardening, light landscaping	Honda GX series, Kubota BX
Electric	Zero emissions on site, low noise, instant torque	Indoor facilities, greenhouse work, eco-friendly farms	John Deere 8R Electric, Fendt e tractor
Hybrid (Diesel Electric)	Combines diesel engine with battery for peak-load assistance	Large farms seeking fuel savings, regenerative braking	Massey Ferguson MF6000 (concept)

3. Classification by Size & Power (Horsepower, HP)

Class	HP Range	Typical Wheel Size	Typical Tasks
Sub-compact	15-30 HP	12-16 in (front)	Lawn care, small garden plots, utility work

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Class	HP Range	Typical Wheel Size	Typical Tasks
Compact	30?60 HP	16?20 in	Small farms, vineyards, landscaping, light loader work
Utility	60?100 HP	20?24 in	General field work, medium?size implements, loader/backhoe combos
Row?crop	100?250 HP	24?30 in	Large farms, high?speed field operations, heavy tillage
Four?wheel?drive (4WD) / High?Power	250?500+ HP	30?36 in	Large acreage, heavy tillage, large implements, orchard work
Special?purpose (e.g., orchard, vineyard)	30?150 HP (often with reduced width)	Narrower wheels, low?center?gravity	Tight rows, steep slopes, delicate crops

HP (horsepower) is a convenient proxy for engine output, but torque curves, transmission type, and weight also dictate performance.

4. Classification by Transmission Type

Transmission	How It Works	Advantages	Typical Applications
Manual (H?shifter)	Gear selector moves through a fixed “H” pattern. Operator must clutch for each shift.	Simple, low cost, reliable, good control at low speeds.	Older models, low?cost tractors, training environments.
Power?Shift (PS)	Multiple gear sets engaged by hydraulic clutches; no clutch pedal.	Seamless shifting under load, fast gear changes.	Mid?range utility tractors, row?crop work.
Hydrostatic (HS)	Continuously variable transmission (CVT) using a hydraulic pump/motor.	Infinitely variable speed, smooth operation, excellent for loader work.	Landscaping, orchard, loader/backhoe combos.

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Infinitely Variable Transmission (IVT)	Electronic control of hydraulic/pneumatic units for truly infinite ratios.	Combines fuel efficiency of manual with ease of hydrostatic.	Modern high efficiency row/crop tractors.
**Dual?Clutch (e.g.,			