

Italianate Tractor Design

There is a uniquely Italian tractor design that features 4 equal size drive wheels with front to rear weight distribution equally spread over both axles. Combined with a very low center of gravity this maximizes tractor stability and traction simultaneously minimizing ground pressure compaction and wheel slip. The consequence of improved traction is much improved fuel efficiency even in very difficult terrain.

This style of tractor originated as an articulated type but soon front steering versions were added that took advantage of all the same qualities while increasing side slope stability and draft. The evolution of the articulated tractor was from a two-wheel walk behind to a four-wheel riding tractor with 3 pt. hitch and PTO. The evolution of this style tractor was also from very light low horsepower to heavier and higher horsepower, in direct contrast to conventional tractors that evolved from very large heavy steam locomotives downward to lighter, smaller and smaller more flexible farm tractors.

As I understand it the Italian government in an effort to rebuild industry and agriculture after WWII devastation offered low cost loans to farmers to mechanize using two-wheel motor cultivators but not more expensive four-wheel tractors. The program succeeded and soon farmers wanted to upgrade to four-wheel riding tractors. Although the farm economy was much improved, the jump from motor cultivator to the available conventional tractor was still too expensive for most.

Seeing an opportunity to expand their traditional markets, motor cultivator manufacturers began to offer a rear differential and axle with seat, steering wheel and rear 3 pt and PTO that could be combined with customers existing motor cultivator to form a 4 wheel tractor that steered by articulation. It is not known to this author which manufacturer was first but by the mid 1960's there were several. In 1970 the author saw an example from Ferrari, a large (18HP 1000lb) model 94 walking tractor that could be ordered as a two-wheel model and you could also order a rear-end assembly to turn it into a four-wheel articulated tractor. A few years later, the TR 94 had become a standard four-wheel model in the Ferrari line up.



1971 Dealer display showing model 94 walking tractor in center and rear assembly to right and behind it. The driven axle trailer could also combine with walking tractor to form a transporter, another unique variation.

The articulated tractors remarkable maneuverability and capacity for being built in extremely narrow configurations known as vignetos (vineyard types) has made them ideal for many kinds of specialized agriculture. The additions of a front 3 pt and a front PTO and later bi-directional operation has continued to expand their multifunctional capacities. Although bi-directional, i.e. reversibility, is now an option on front steering tractors, both Italianate as well as conventionals, it reaches perfection in the articulated models. Articulated tractors steering feel and behavior is the same whether the driver faces engine end or 3 pt end of the tractor.

One of the principal advantages of a bi-directional tractor is its ability to allow driver to see clearly what he or she is doing. Mowing and shredding are good common examples, whether you use a rotary or a flail the unobstructed driver view allows close fast work around obstacles. An important bonus is that a more uniform cut is achieved because grass is cut before tractors wheels crush grass preventing it being cut only to have it spring back up a few hours later.

This is a multiple bladed rotary mower with a parallelogram mount to permit it to offset by a hydraulic cylinder. It has very low profile, clean smooth design to prevent damage to low hanging fruit or foliage. Tractor is a reversed articulated tractor from Antonio Carraro (70 HP) SRX 8400.



This flail mower offsets hydraulically and can be mounted front or rear. It is equipped with gage wheels to follow ground contour.
Tractor is Pasquali Ergo (60 HP)

This advantage becomes even more important when shredding orchard prunings where hard and thorny woods can damage expensive tires. When clearing brush and trashy areas having the mower find obstructions instead of the tractor, protects your more expensive investment.



This flail mower is setup for front or rear mount and has hydraulic cylinder to permit side shifting on the move. The tractor is a reversible Ferrari Cobram of 46 HP.

With the tractor in the reversed mode, several functions are made more efficient for example forklift work. A 3 pt. mounted forklift mast instantly allows fast precise loading of bins and pallets on and off trucks and in and out of coolers, sheds etc. Because of the tractors off road capabilities moving orchard bins and other bulk containers are more readily done. Likewise handling “super bags” of seed and fertilizers became easier and practical for even small farmers who cannot justify single purpose machines.

Forklift mast allows handling of pallets and bins with precision and safety. Tractor shown is articulated 60 HP Antonio Carraro Supertigre 7700.



Skip loader functions are easily accomplished by adding a 3 pt. loader attachment. The reversed tractor driver’s unobstructed view allows one to see what is going into the bucket making quick work of loading or turning compost, cleaning barns, or moving brush. Not having the engine hood between driver and loader make drivers work far easier and less fatiguing.

Skip Loader function can be performed by adding rear loader and reversing tractor lifts loose material up to eight feet to load trucks or spreaders or can be used to turn compost piles etc. Some versions of this type of loader mount to brackets on tractors axles and some mount on 3 pt.



In this picture, the bucket has been replaced by a manure fork/brush fork and is mounted on a reversed PGS tractor.



The reversed mode permits cultivators and other specialized tools to be placed in front of the driver again taking advantage of the unobstructed view of the work being done.



A vineyard grape hoe that tills berm area is ideally mounted in front of driver, pictured here on reversed Antonio Carraro 5500 Vigneto.



In this picture a vineyard hedging tool is shaping vines, the tractor is an Antonio Carraro articulated Vigneto model.

The reversed tractor can be equipped with a central mount double acting sicklebar mower to swath grain and beans intercropped in orchards. Central mounted disc mowers and drum mowers with or without conditioning rolls effectively cut and windrow alfalfa and other hays in orchards or on steep or hilly land. The efficiency and the quality of the work done this way equals that of the single purpose machines used on large operations, while leaving the tractor available for many other jobs.



Pictured here is 6 ft. wide double acting sicklebar mower being used to swath hay. Tractor is Antonio Carraro TTR3800 hydrostatic reversible tractor. This style of sicklebar is less prone to plug in damp or viney crops.

The tractor shown here is an Antonio Carraro 8008 Tigrone (60HP) operating a drum mover equipped with conditioning rolls. Hay is cut, crimped and windrowed in one pass.



The tractor shown here is a reversible Antonio Carraro TTR9400 (80 HP) designed primarily for hay making on very steep slopes. It has a good deal of under tractor clearance so it can straddle windrows and has a wide stance for stability.

Bi-directional (Reversible) versions are now very common in the 48 HP to 80 HP categories of agricultural tractors in Europe on which you expect to find multiple wet disc clutches on transmissions and PTO's, wet disc brakes and with multiple hydraulic circuits with separate pumps for different functions. What is truly remarkable is to find all these up to date features in a small 36 HP tractor like the Ferrari Cobram 40AR. It is only 9 feet long and 44 inches wide and weighs just 2541 lbs. The condensation of modern engineering and imaginative design into a very compact moderately priced tractor greatly benefits even very small diversified farms.

Ferrari Cobram 40 articulated bi-directional tractor. .

