

BOLINDER – MUNKTELLS (AVANCE)



BOLINDER – MUNKTELL
AKTIENOLAGET BOLINDER · MUNKTELL · ESKILSTUNA



Farm tractors – Bolinder

Like the Munktell company, Bolinders also devoted time and effort into making a farm tractor very early on. Because of their background in engine production and diverse engine applications, making a tractor in the post world war one era, where the demand for mechanical alternatives was at an all time high and manpower was a scarce resource, seemed the logical next step.

Bolinder only produced one tractor model by themselves before the successful collaboration between them and the Eskilstuna based Munktells began. Because of the exceptional engines Bolinder had produced over the years, it was natural to incorporate that knowledge and experience into the new company and its products when the two companies merged in 1932

Farm tractors – Avance

The company AB Avancemotor made a great many things and among them were one tractor model and just before that a sort of predecessor to the tractor, which was a motorized plough.

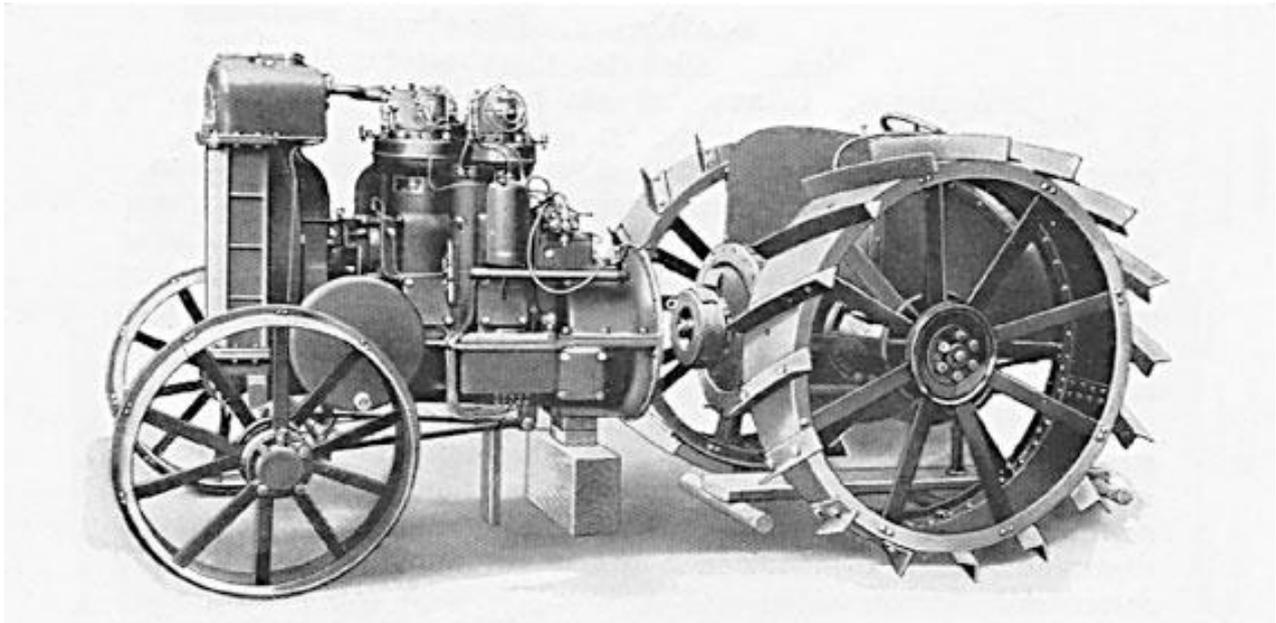


Avance Motorized Plough

The motorized plough type 1 was introduced by Avance in 1913 and was a sort of simple tractor. The main difference between the motorized plough and the Avance tractor that was to come years later (and all other tractors really) was that the motorized plough was only a plough while the tractor was a more versatile machine where attachments could be changed. In 1920 the motorized plough type 1 was sold for a price of SEK 15 000.

Motorized plough type 1 1913 specifications

Engine	Avance
Cylinders	1
Cylinder capacity, l	6
Rated output, hk	19
Gears, forward/reverse	2/2
Wheelbase, mm	1610
Operating weight, kg	4230
Production years	1913-



The Avance Tractor

The one tractor model that AB Avancemotor made had a few quite ingenious details that, although not revolutionary in any technical sense, did simplify some procedures and tasks that were otherwise associated with tractor maintenance.

One such detail was that the small burner which heated the engine to operating temperature ran on the same fuel that the tractor ran on which was unusual at the time. All electrical apparatus had been avoided in this machine because it had been seen as the weakest link on earlier similar machines.

At the time of this machine's production, electronics was the hardest thing to incorporate into a farm tractor which was in all other aspects, built to withstand the harshest of wind and weather. Often times the electronic apparatus suffered from unmild treatment and became an annoyance to customers.

The tractor was produced during 1924 to 1932, however it was changed and updated somewhat in 1928. Although it was a strong competitor at the time, the number made was quite limited

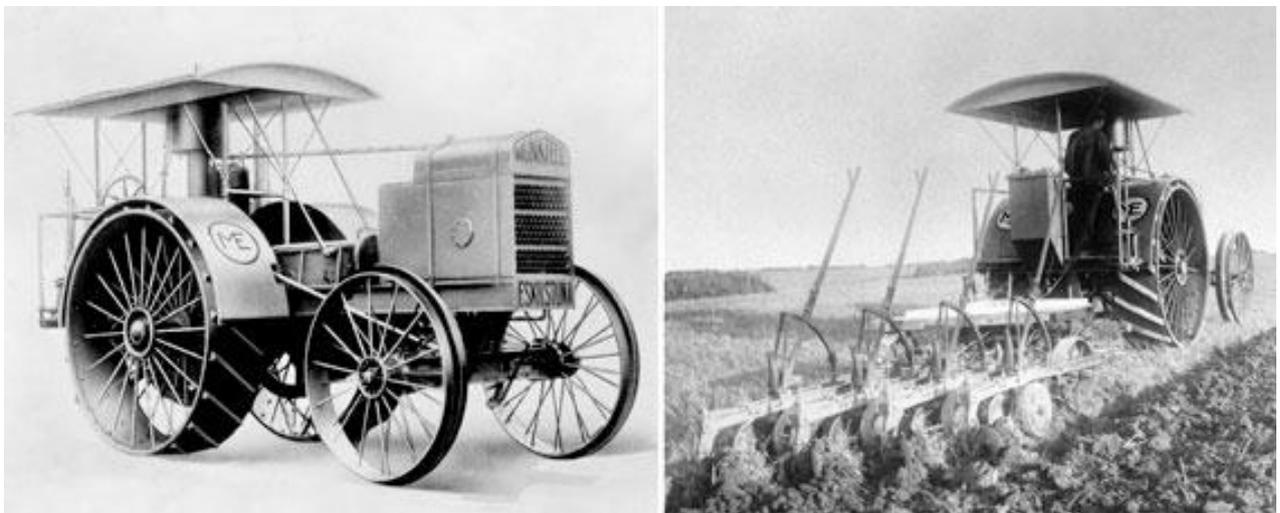
Avance tractor	specifications
Engine	Avance
Rated output, hk	30
Volume in tank, l	75
Length, mm	3100
Gears, forward/reverse	2/1
Max speed forward/reverse, km/h	4,56/2,22
Wheelbase, mm	1800
Operating weight, kg	2600

Farm tractors – Munktell

Thirty-one of the first Munktell tractors were built, with engines that were also made by Munktells. These were actually two single-cylinder 15 bhp engines coupled together. According to notes that have been found, 1+10+20 of these tractors were built. Sales journals for 1915–1925 showed that the tractor was difficult to sell after 1916, when Munktells presented a new, lighter model with a single-cylinder engine.

Some of the older tractors were exported – amongst other places to Hungary in 1918, Argentina in 1924 and Poland in 1925.

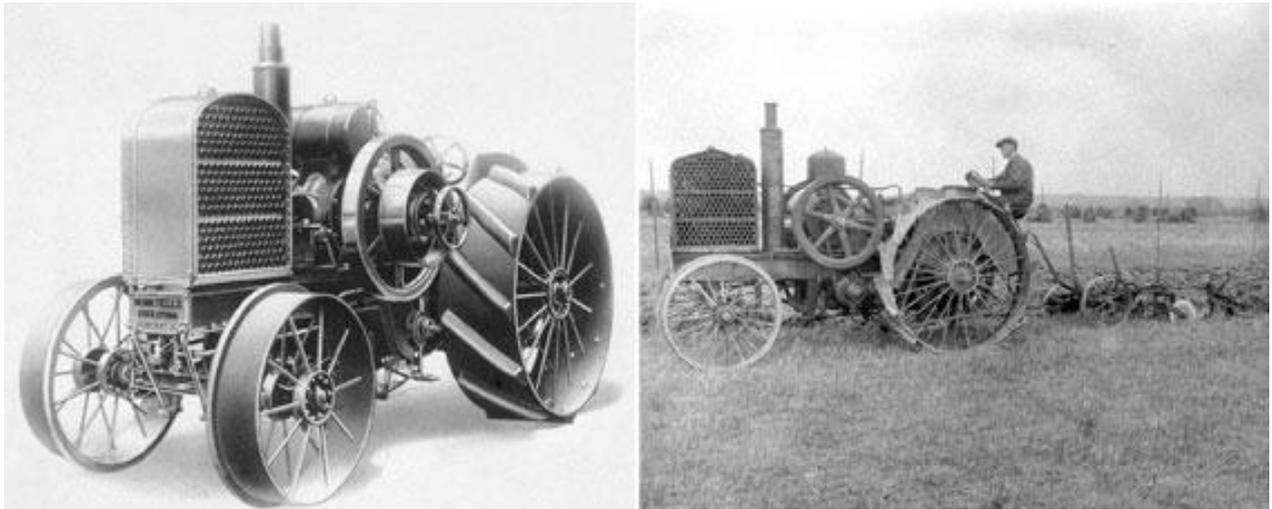
The first tractor was sold for a price of SEK 17 500, which was expensive in those days. By comparison, a self-propelled traction engine of 24 bhp (the SK-4) cost SEK 7 100. The price then rose to SEK 27 500 in 1918 but had fallen to SEK 14 000 by 1922.



Munktells 30-40 hk

The first Swedish-made tractor was intended primarily for large farms or estates. It was powered by a vertical ignition bulb engine with water injection. The engine ran at a constant speed of 550 r/min, delivering 30 hk in normal operation, with a peak power of 40 hk. The cooling system contained 380 liters of water. The engine was a two-stroke, crude oil engine with glow bulb ignition. It had two cylinders, or, to be more precise, it was made up of two single-cylinder engines in tandem. It could take as long as ten minutes for the blowlamps to get the ignition bulbs hot enough for the engine to start. The tractor had three forward speeds, 4,4 km/h for travel and 2,8 and 3,6 km/h for working. A pulley on one side of the tractor could be used to drive a threshing machine, for instance.

Type 30-40 hk	specifications
Engine	Munktells
Cylinders	2
Cylinder capacity, l	14,4
Rated output, hk	40
Gears, forward/reverse	3/1
Wheelbase, mm	3000
Operating weight, kg	8300
Production no.	31
Production year	1913-1915



Munktells 18-20 and 20-24 hk

During the First World War there was a shortage of people to work on the land. This led to growing interest in mechanization and in a small tractor suitable for small farms, the most common kind of farm. The Munktell 18-20 hk, which was in principle created by halving the larger 30-40, was developed. The machine weighed 4,2 t and was powered by a single-cylinder horizontal ignition bulb engine with a capacity of about 12 liters (240 x 280 mm). The tractor was designed to work with three-share plows. Its normal power output was 18 hk, with a peak output of 20 hk.

The power was soon increased to 20 and 24 hk respectively, which led to a change in the model number. The low-revving engine, which ran at 400 r/min, had two large flywheels for smooth running. The gearbox had two forward gears, giving speeds of 2,4 and 2,7 km/h, and one reverse gear. Needing little supervision, the machine became a popular stationary power source for threshing machines, crushers, etc. It continued to be used for this purpose long after it became obsolete for use as a tractor in the field.

18–20 hk and 20–24 hkspecifications

Engine	Munktells
Cylinders	1
Cylinder capacity, l	12,7
Rated output, hk	18/20, 20/24
Gears, forward/reverse	2/1
Wheelbase, mm	2560
Weight, kg	4200
Production no.	
...18-20 hk	8
...20-24 hk	320
Production year	
...18-20 hk	1916
...20-24 hk	1917-1920



Munktells AC, AE and AF Tracked Tractors

During the war years, around 80 tracked tractors were made for the Swedish Royal Air Force Materiel Administration and for use on peat bogs. Three types of engine were used. The Air Force Materiel Administration had six-cylinder Volvo engines such as the BM 4, but these were adapted to be powered by "motyl", a mixture of alcohol and gasoline.

Scania Vabis engines were also used for producer gas operation and ignition bulb engines. The tracked tractors had four carrier wheels on either side and were steered with a steering wheel. The total weight was about 3 400 kg.

AC, AE, AF

Production year 1941

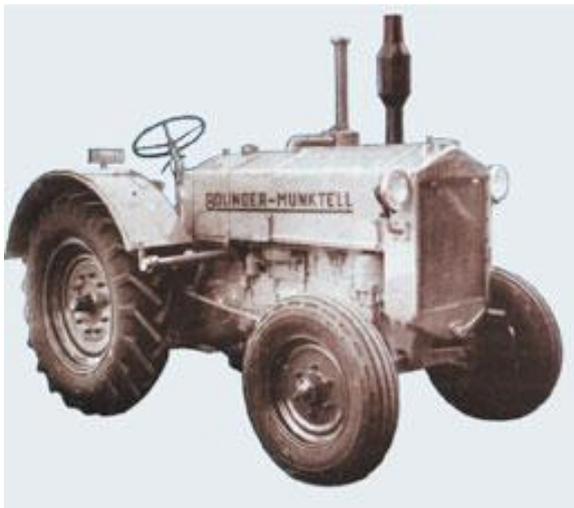


Munktells BM 2 / Bolinder-Munktell BM 2

The Munktells Typ 25 was followed by the BM 2, which was largely the same machine as the Typ 25. Omitting the horsepower figure from the Typ designation followed the prevailing trend among American manufacturers. With time, the model underwent many improvements, for example foot operation of the clutch.

The driving wheels were 24". During the war years, about a hundred BM 2 machines were produced with a producer gas unit. These were designated GBM 2.

BM 2	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	32
Gears, forward/reverse	4/1
Wheelbase, mm	1780
Weight, kg	2100
Production no. including GBM	2473
Production year	1939-1946



Munktells BM 3

Some farmers wanted to use a three-share plow and larger machines than the BM 2. This led to the introduction of the BM 3. The two-cylinder ignition bulb engine was designated W5. It developed 33–50 hk at 1 000 r/min.

The engine had top injection and a working speed of 1 000 r/min. 28" driving wheels were fitted. The upward-pointing exhaust pipe was a striking feature of this model.

BM 3	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	40
Gears, forward/reverse	4/1
Wheelbase, mm	1815
Weight, kg	2450
Production no.	55
Production year	1939



Munktells BM 4

To ensure that the manufacture of tractors did not come to a complete standstill during the war, Volvo purchased one hundred FCG carburettor engines for producer gas operation, to be installed in BM 2 chassis. The engine delivered 30 hk at 1 500 r/min in the tractor. This meant that the gear ratios had to be changed. The gearbox was available with a ratio of iron wheels and two different ratios for rubber wheel, with top speeds of 14 and 15 km/h respectively.

Engine and gearbox were mounted on BM 2 chassis. The producer gas unit required an electric fan, so the machine was equipped with a battery, a generator and a starter motor. The overall length of the tractor was 1 900 mm, compared with 1 780 mm for the BM 2. The only other major change that had to be made was to move the pulley to the right-hand side of the machine, since the producer gas equipment was better suited for mounting on the left.

BM 4	specifications
Engine	Volvo FCG
Cylinders	6
Cylinder capacity, l	4,4
Rated output, hk	32
Gears, forward/reverse	4/1
Wheelbase, mm	1900
Weight, kg	2350
Production no.	100
Production year	1939-1945



Munktells BM 10

The BM 10 was developed for small and medium-sized farms. The tractor was also designed to be suitable for non-agricultural haulage work. The engine was a two-cylinder, two-stroke, ignition bulb unit which developed 23 hk at 1200 r/min. It had electric starting, and the ignition bulbs were heated by heating coils. The gearbox, with five forward gears and one reverse, had longitudinal shafts and was the same as that used in the smaller Volvo tractors. The top speed was 20 km/h and the speed in first gear at full engine speed was 4 km/h. The total weight was 1300 kg. A feature of the tractor was its clean lines, with most of the components concealed behind hinged covers.

The hood was only 28 cm wide, so that forward visibility was extremely good. The rear axle casing was shaped at the back so that accessories such as power take-off, pulley gear unit and later a hydraulic lift could be fitted. At full engine speed the power take-off delivered 540 r/min. This meant that almost the entire engine output could be used for the attachments. The tractor was equipped with hydraulics. This made it possible to fit a large number of hydraulically-operated attachments such as front loaders, plows, mowers, compressors and so on.

BM 10	specifications
Engine	Bolinders W3
Cylinders	2
Cylinder capacity, l	2,72
Rated output, hk	23
Gears, forward/reverse	5/1
Wheelbase, mm	1650
Weight, kg	1300
Production no.	6400
Production year	1947-1952



Munktells BM 20

Munktells GBMV-1 becomes BM 20.

After the war, the producer gas equipment could be removed and the engine modified to run on liquid fuel. After this, the model designation was changed to BM 20. W5 was the designation of the 5,3 liter ignition bulb engine used in the BM 20, with an output of 41 hk at 1 050 r/min.

The top speed was 16,5 km/h or 20 km/h. The tractor weighed 2 650 kg, but this could be increased to 3080 kg with weights and up to 3500 kg with water in the tires.

BM 20	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	41
Gears, forward/reverse	5/1
Wheelbase, mm	1800
Production no. including GBMV-14000	
Production year	1944-1950

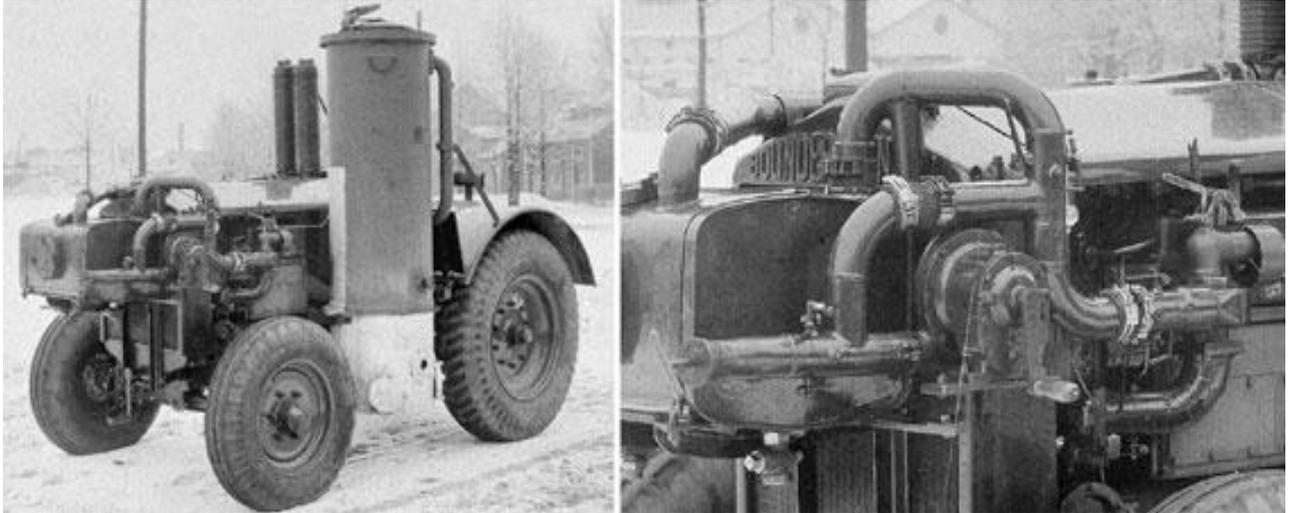


Munktells / Bolinder-Munktell BM 21

The BM 21, the successor to the BM 20, was largely the same machine, except for the injection system of the engine, which had been changed from side injection with fixed injectors to top injection with variable injectors. This gave a higher engine output – 46 hk. The injectors and their injection cone shape were controlled with a lever on the steering column.

One extreme position was for starting and idling, the other was for peak load. The driver could vary the setting to suit the fuel and the load. To exploit the increased engine power, the tractor was fitted with 30" tires, increasing its off-road performance.

BM 21	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	46
Gears, forward/reverse	5/1
Wheelbase, mm	1800
Weight, kg	2650
Production no.	1013
Production year	1951-1953



Munktells GBM 2

During the war years, about a hundred BM 2 machines were produced with a producer gas unit. These were designated GBM 2.

Units and conversion kits were also supplied for Typ 25 and BM 2 tractors that had already been delivered.

GBM 2	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Gears, forward/reverse	4/1
Wheelbase, mm	1780
Production no. including BM 2473	

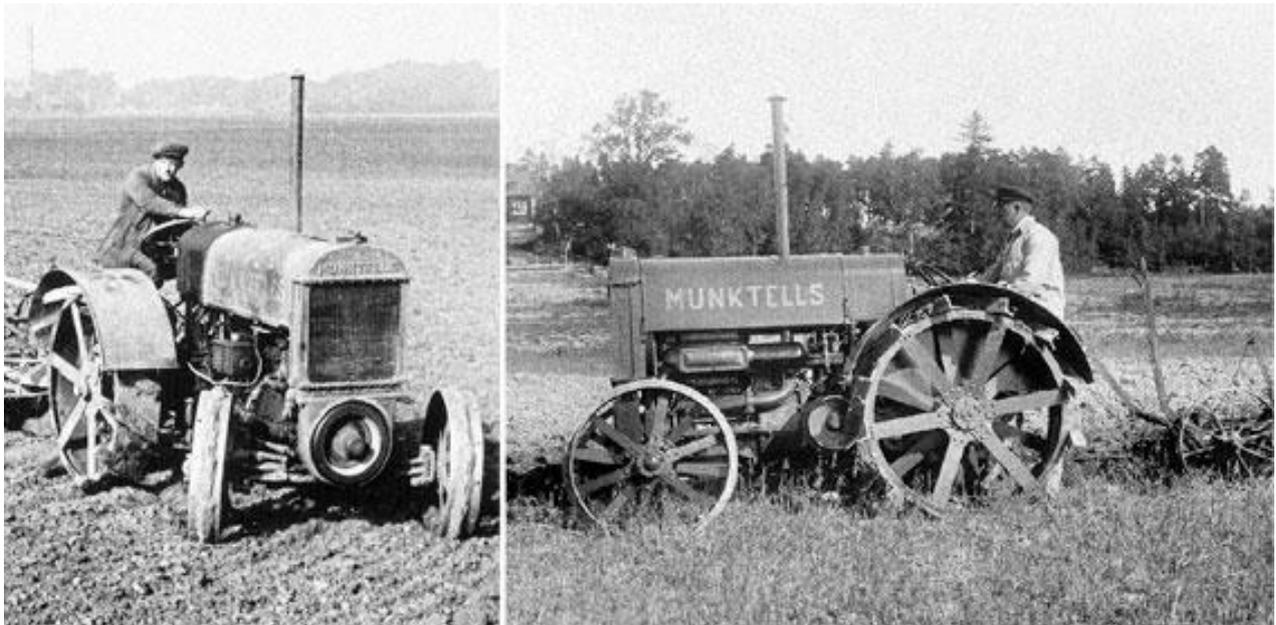


Munktells GBMV-1

Production of combine harvesters had begun and a more powerful engine was needed. As this was during the Second World War, the engine had to be powered by producer gas. With this in mind, the GBMV-1 was developed. 1943 saw the start of technical cooperation between Bolinder-Munktell and Volvo, which started to make tractors at this time. The two firms developed a common tractor model in which almost everything except the engines was the same. BM fitted ignition bulb engines, while Volvo fitted carburettor and Hesselmann engines.

The newly-developed five-speed gearbox was made by BM and was used in both the Munktell GBMV-1 and the Volvo T 41. The two-cylinder ignition bulb engine developed 36 hk at 1 150 r/min. Top speed with rubber wheels was 16 km/h. When the war ended, liquid fuel became available and the tractors were converted to run on oil. When this was done, the type designation of the tractor was changed to BM 20.

GBMV-1	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Power, hk	36
Gears, forward/reverse	4/1
Wheelbase, mm	1780
Production no. including BM 20	473
Production year	1944-1945



Munktells type 22 hk

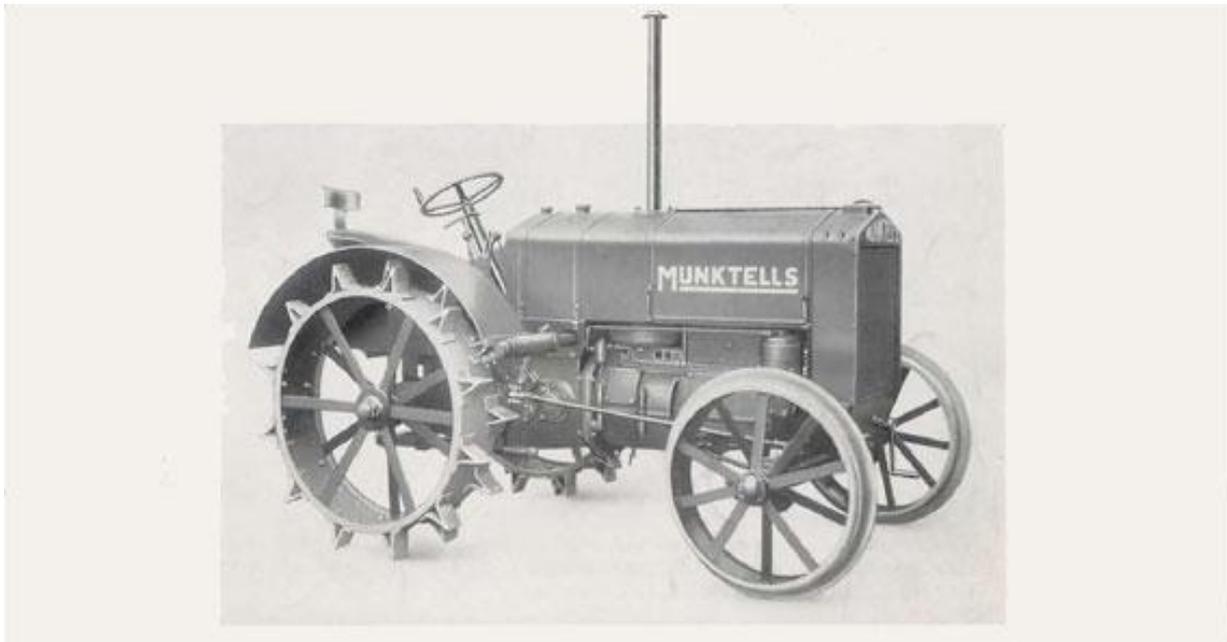
The type 22 hk was designed on the new principles, which was also used by the American manufacturers. The engine, gearbox and rear axle casing were assembled together to form one load-bearing unit. This meant that a heavy, bulky chassis was no longer needed. A compact and lighter tractor was the result. The engine was a 7,3 liter, two-cylinder, two-stroke ignition bulb engine with a centrifugal governor which kept the engine speed to 700 r/min both at idling and at full load. Cylinder bore 160 mm, stroke 180 mm. Heating the ignition bulbs took far less time than before, only 2-3 minutes.

Another innovation was the compressed air starter, which started the engine using compressed air from a reservoir that was charged when the engine was running.

The forerunner of the oil bath cleaner was also introduced. It consisted of a large number of metal parts which were kept moistened by oil to separate sand and dust. The tractor was developed to use a two-share plow and was far easier to manoeuvre than earlier models, since its right-hand wheels ran in the furrow when plowing.

The tractor was also used to power the first Munktell grader. A total of 1579 tractors were produced and around 400-500 of them were used for graders.

Type 22 hk	specifications
Engine	Munktells
Cylinders	2
Cylinder capacity, l	7,3
Rated output, hk	26
Gears forward/reverse	3/1
Wheelbase, mm	1680
Weight, kg	2580
Production no.	1579
Production year	1921-1934

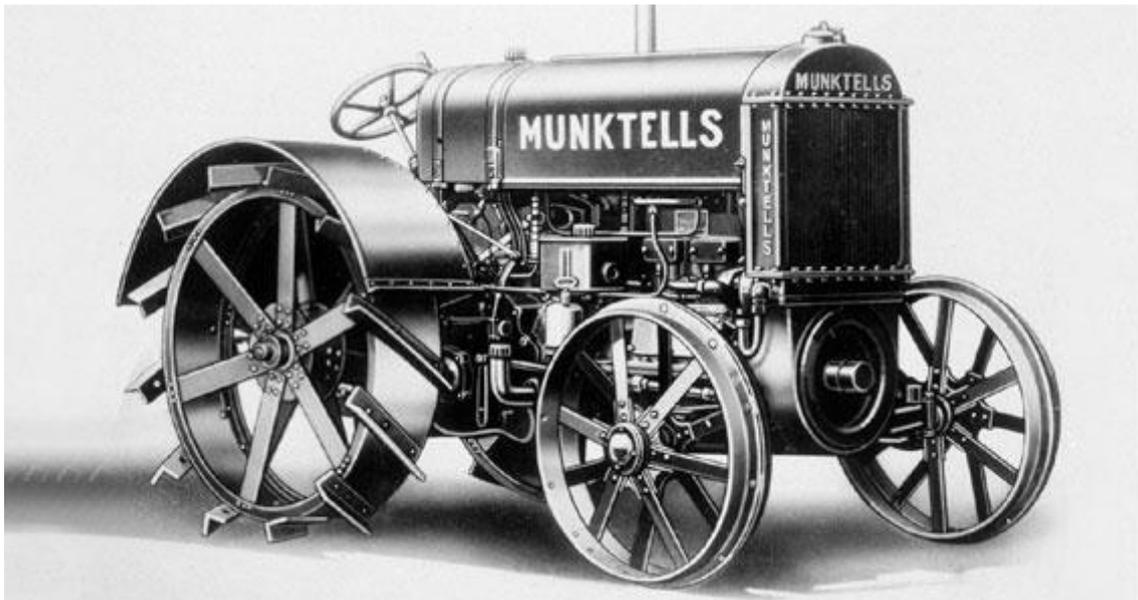


Munktells Type 25 hk

The Munktells Type 25 has become a classic and is popular with collectors. The tractor weighed 2 100 kg and was powered by the Bolinder W5 5,3 liter two-cylinder, two-stroke ignition bulb engine, with an output of 32 hk at 900 r/min. The bore and stroke of the cylinder were the same, 150 mm. The engine idled at 900 r/min, and its speed could be controlled from the driver's seat. The machine had compressed air starting and the ignition bulbs were quick to heat up, 3-4 minutes.

The gearbox had four forward speeds and one reverse, with a lever-operated plate clutch. A "coupling brake" was provided for easier gear shifting. The speeds were 3,2 – 4,2 – 5,0 – 6,2 km/h forward and 2,5 km/h reverse. When rubber tires were used, the ratios were changed, increasing the maximum speed to 10 and 14 km/h.

Type 25 hk	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	32
Gears, forward/reverse	4/1
Wheelbase, mm	1780
Weight, kg	2100
Production no.	1314
Production year	1934-1938



Munktells Type 30 hk

The export markets found the Type 22 hk too small, so the larger Type 30 hk was developed. With its higher power output, normally 30 hk, with a maximum of 36 hk, it could pull a four-share plow and drive large stationary threshing machines. The engine was a vertical 10,2 liter, two-cylinder, two-stroke ignition bulb engine with a centrifugal governor which kept the engine speed to 650 r/min both at idling and at full load. Cylinder bore 160 mm, stroke 180 mm.

Three forward gears gave speeds of 3,6 - 4,8 - 6,0 km/h and there was a 2,7 km/h reverse gear. Solid rubber tires and electric lighting were available as optional extras.

The tractor was also used as a power unit in graders. About half the 545 tractors produced were used in graders.

Type 30 hk	specifications
Engine	Munktells
Cylinders	2
Cylinder capacity, l	10,2
Rated output, hk	36
Gears, forward/reverse	3/1
Wheelbase, mm	1780
Weight, kg	3150
Production no.	442
Production year	1927-1935



Farm tractors – Bolinder-Munktell

After World War II, the demand for tractors in farming, in forestry as well as in other applications grew. With the development of diesel engines, however, the crude-oil engine became out of date. AB Bolinder-Munktell concentrated on a diesel engine series of their own for their top-of-the-line tractors.

In 1952, a newly-developed line of diesel engines was presented consisting of one, two, three and four-cylinder direct-injection units. Now with a rapidly growing Volvo as owner, BM took major steps towards becoming a highly industrialized, efficient producer of agriculture-, forestry- and construction equipment



Bolinder-Munktell BM 2 / Munktells BM 2

The Munktells Typ 25 was followed by the BM 2, which was largely the same machine as the Typ 25. Omitting the horsepower figure from the Typ designation followed the prevailing trend among American manufacturers. With time, the model underwent many improvements, for example foot operation of the clutch.

The driving wheels were 24". During the war years, about a hundred BM 2 machines were produced with a producer gas unit. These were designated GBM 2.

BM 2	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	32
Gears, forward/reverse	4/1
Wheelbase, mm	1780
Weight, kg	2100
Production no. including GBM	2473
Production year	1939-1946

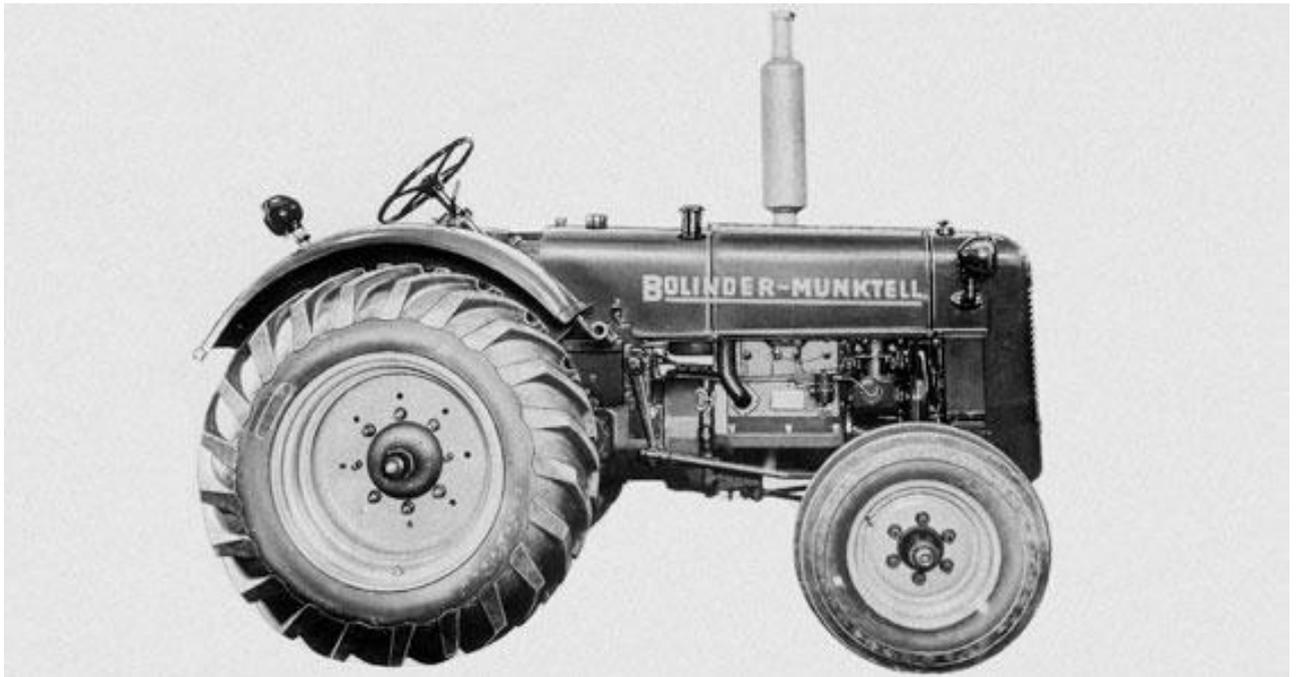


Bolinder-Munktell BM 15 (Terrier)

The BM 15 was a small gasoline-driven tractor which was produced to compete in the smallest market segment. Originally the tractor was only intended to be sold as a Volvo product but it was soon included in the BM range as the BM 15 or Terrier.

The model designation was soon changed to BM 425. The engine used was the B 14 gasoline engine, 120 000 of which had been produced for the Volvo PV 444 car and later for the Volvo Amazon.

BM 15 (Terrier)	specifications
Engine	Volvo B 14 C
Cylinders	4
Cylinder capacity, l	1,41
Rated output, hk	29
Gears, forward/reverse	4/1
Wheelbase, mm	1915
Weight, kg	1350
Production no.	275
Production year	1956



Bolinder-Munktell / Munktells BM 21

The BM 21, the successor to the BM 20, was largely the same machine, except for the injection system of the engine, which had been changed from side injection with fixed injectors to top injection with variable injectors. This gave a higher engine output – 46 hk. The injectors and their injection cone shape were controlled with a lever on the steering column.

One extreme position was for starting and idling, the other was for peak load. The driver could vary the setting to suit the fuel and the load. To exploit the increased engine power, the tractor was fitted with 30" tires, increasing its off-road performance.

BM 21	specifications
Engine	Bolinders W5
Cylinders	2
Cylinder capacity, l	5,3
Rated output, hk	46
Gears, forward/reverse	5/1
Wheelbase, mm	1800
Weight, kg	2650
Production no.	1013
Production year	1951-1953

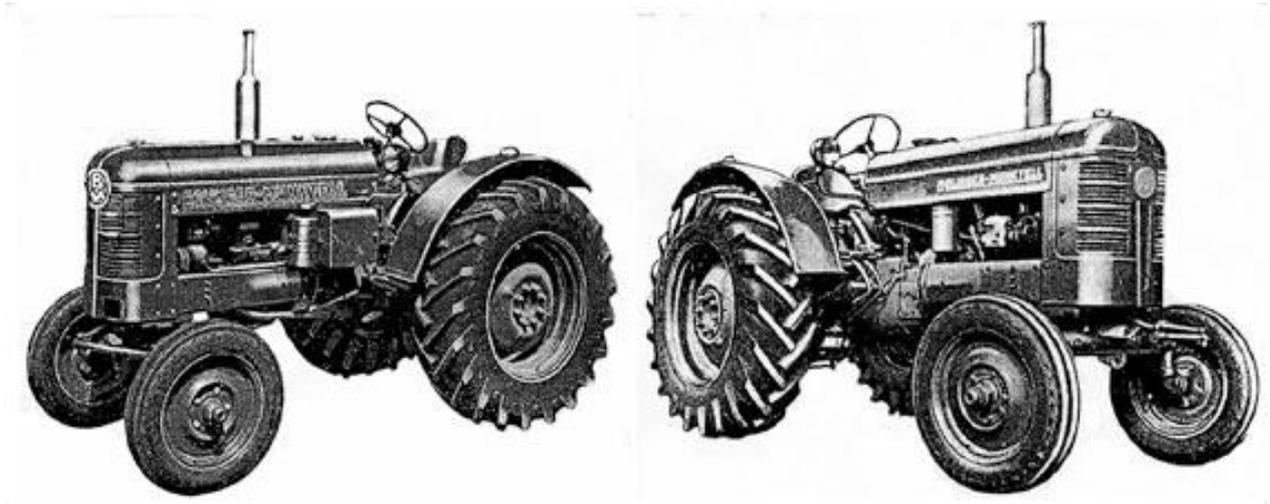


Bolinder-Munktell BM 24, BM 25 / Volvo T24, T25

The design of the tractors was the same as the Volvo T 24 and T 25, the next stage in the development of the T 20 family, but they were painted green. These were some of the improvements: increased engine power, wheelbase lengthened to 1 700 mm, bigger wheels, and better standard equipment, including hydraulic lift and power take-off.

The total weight was also increased slightly. The BM 24 was fitted with the Volvo CF 22, a 2,2 liter kerosene engine which developed 27,5 hk at 2 000 r/min. The BM 25 was fitted with the Volvo CB 22, a 2,2 liter gasoline engine which developed 31 hk at 2 000 r/min.

BM 24, BM 25	specifications
Engine	CF 22
... Cylinders	4
... Cylinder capacity, l	2,2
... Rated output, hk	27,5
Alt. engine	CB 22
... Cylinders	4
... Cylinder capacity, l	2,2
... Rated output, hk	31
Gears, forward/reverse	5/1
Wheelbase, mm	1770
Operating weight, kg	1570
Production no.	962
Production year	1954-19

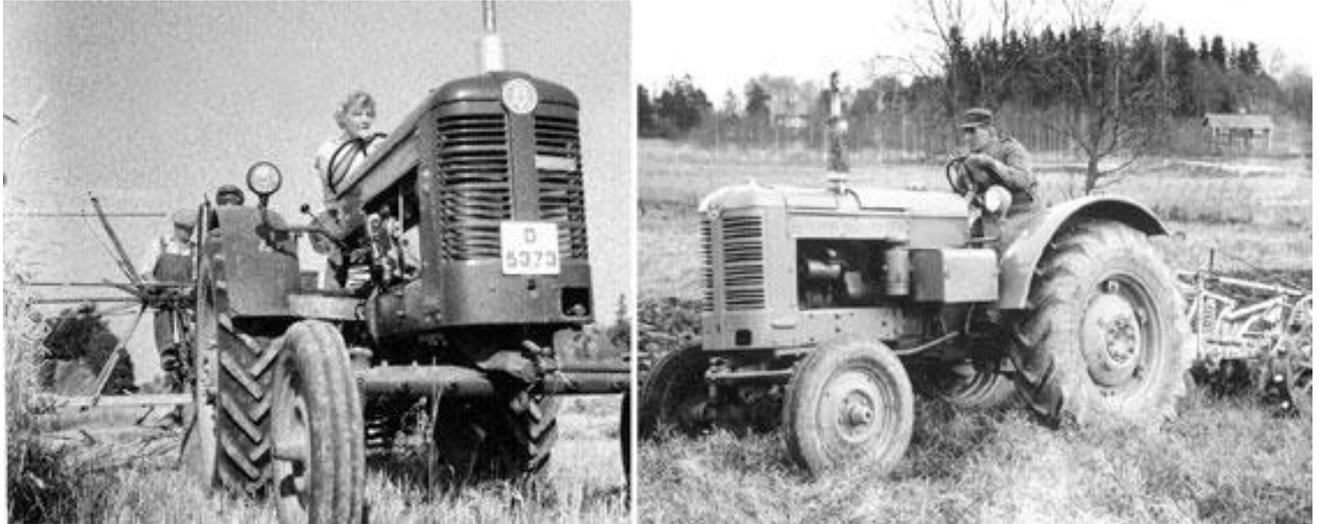


Bolinder-Munktell BM 31, 33/32, 34

A small number of BM-branded tractors based on the Volvo T 31, T 32, T 33 and T 34 were produced. The T 30 series was built on the same principles as the T 20 series, but they were slightly larger. The chassis was designed so that front loaders and various attachments could be fitted. The tractor had a small turning radius and high ground clearance thanks to the portal rear axle. It became popular for hauling timber, thanks to the increased comfort of the sprung and damped seat and its ability to reach more than 27 km/h at full throttle.

Power take-off and hydraulic lift were available as extra equipment. The BM 31 had a four-cylinder Volvo D 4 F kerosene engine. The BM 32 had a four-cylinder Volvo D 4 B gasoline engine. The BM 33 and BM 34 were designed to work on crops grown in rows. The tractors had a telescopic front axle with stepped variable track from 129 to 171 cm and narrower wheels, 6.00-19 front and 11-38 rear.

BM 31, 33/32, 34	specifications
Engine	Volvo D 4 F
... Cylinders	4
... Cylinder capacity, l	3,46
... Rated output, hk	36
Alt. engine	Volvo D 4 B
... Cylinders	4
... Cylinder capacity, l	3,46
... Rated output, hk	45
Gears, forward/reverse	5/1
Wheelbase, mm	1960
Weight, kg	2280
Production no.	44
Production year	1954-1957



Bolinder-Munktell BM 35, BM 36 / Volvo T35, T36

The first tractors with the new diesel engine were the BM 35 and BM 36. They were powered by the three-cylinder Bolinders 1053 engine, which had an output of 42,5 hk at 1 800 r/min. The BM 35 was the basic model, with a fixed front axle, while the BM 36 had an adjustable front axle. The total weight was about 2 500 kg. This could be increased to about 3 600 kg with weights and with liquid in the tires. Sales of the red variant, the Volvo T 35/36, began in 1954.

A special variant with dual row crop front wheels was produced for export to Colombia. The BM 35 was used as a basis for the H 10 rear loader, the first loader in the company's history.

BM 35, BM 36	specifications
Engine	Bolinders 1053
Cylinders	3
Cylinder capacity, l	3,36
Rated output, hk	42,5
Gears, forward/reverse	5/1
Wheelbase, mm	1 960
Weight, kg	2 460
Production no.	
– BM 35	4 206
– BM 36	6 040
Production year	1952–1959

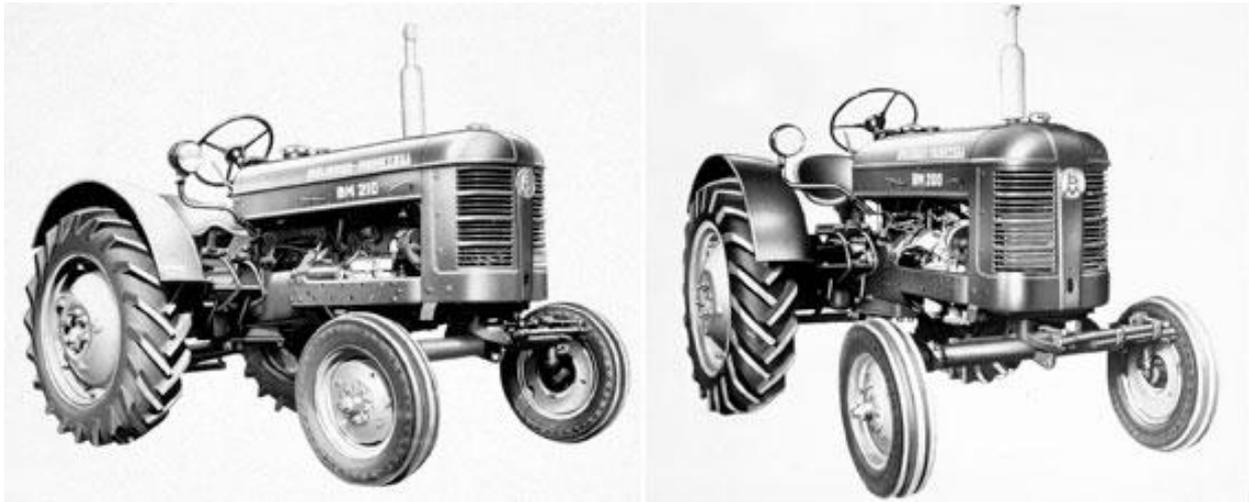


Bolinder-Munktell BM 55 / Volvo T 55

The successors to the BM 20 and the Volvo T 43 were the BM 55 and the T 55. These tractors were painted red or green depending on whether they were to be sold as a Volvo tractor or a BM tractor by the respective dealer network. From 1958 on, all BM/T 55s were painted green. The four-cylinder Bolinders 1054 engine developed 53 hk at "normal" engine and 57 hk at the maximum speed of 1 800 r/min. This model was regarded as rugged and uncomplicated, well suited for export. It had a five-speed gearbox which gave it a top speed of 27,4 km/h. A dog-clutch differential lock was introduced later.

Standard tire dimensions were 14-34 rear and 7.50-18 front. The total weight of 2 950 kg could be increased to about 4 500 kg with weights and with liquid in the tires. The pulley shaft was much appreciated, especially in export markets, for driving stationary plant via a flat belt. The capacity of the BM 55 and its powerful engine made it attractive for manufacturers of built-on equipment outside the agricultural sector.

BM 55	specifications
Engine	Bolinders 1054
Cylinders	4
Cylinder capacity, l	4,48
Rated output, hk	57
Gears, forward/reverse	5/1
Wheelbase, mm	2 175
Operating weight, kg	4 560
Production no.	1 745
Production year	1953–1959



Bolinder-Munktell BM 200, BM 210 (Teddy)

For the outset the models were intended for export, but there was a great demand for them in Sweden. Apart from the engines, these models can be said to be a sister model of the popular Volvo T 24/25. The four-cylinder 2,2 liter Austin carburettor engine had battery ignition.

The gasoline variant in the BM 200 developed 32 hk at max engine speed (2 000 r/min) and 30 hk at normal engine speed (1 700 r/min). The corresponding figures for the kerosene engine in the BM 210 were 29 and 27 hk respectively. The maximum speed was 26 km/h.

BM 200, BM 210 (Teddy) specifications

Engine	Engine
Cylinders	4
Cylinder capacity, l	2,2
Rated output, hk	32
Gears, forward/reverse	5/1
Wheelbase, mm	1770
Operating weight, kg	1420
Production no.	
– BM200	1140
– BM210	1260
Production year	1953–1955



Bolinder-Munktell BM 230 (Victor) / Volvo T 230

22 June 1955 saw the launch of the BM 230, a tractor that was to become a legend. It was built on the same chassis as the 20 series. The two-cylinder Bolinders 1052 engine had excellent pulling power and lower fuel consumption than any other comparable tractor engine. When the tractor was working hard there was hardly ever any need to shift down. The engine speed simply dropped until the load eased off again.

The tractor was fitted with a hydraulic lift. All 230s, both Volvo and BM, were painted red from 1 May 1960. This model was named the Victor. In time, more tractors were given such names. For extra tractive effort two tractors could be coupled together, but this arrangement lacked flexibility.

In the spring of 1958, the BM 230 was upgraded, with higher engine output.

BM 230 (Victor)	specifications
Engine	Bolinders 1052
Cylinders	2
Cylinder capacity, l	2,24
Rated output, hk	
– Original	29
– 1958 version	31
Gears, forward/reverse	5/1
Maximum speed, km/h	
– Original	26
– 1958 version	22,9
Wheelbase, mm	1850
Operating weight, kg	1650
Production no.	10929
Production year	1955-1961



Bolinder-Munktell / BM-Volvo BM 320 B, 320 D / Volvo 320 B, 320 D (Buster)

The time had come to modernize the BM 230 Victor. The BM 320 D Buster was the next stage in the development. It had a three-cylinder Perkins turbulence chamber engine, a Terra-Trol hydraulic system, and a five-speed gearbox with independent power take-off. A two-stage clutch is available as an alternative to a clutch-dependent power take-off. The demand for a small diesel tractor was high in the Nordic Countries, but not so high in other markets, where a Bolinder diesel engine in the tractor would have been preferred. But more of the Buster were made yearly than any other BM tractor. In the 1963, the record year, no less than 5 336 Busters were made. After a time, the Buster also became available with a Volvo gasoline engine as an alternative to the Perkins diesel, but this was not a success. The end of the era of carburettor tractors was past. Even so, 650 units of the BM 320 B were made in 1962–63.

Although the period of manufacture was short, many improvements were introduced. A proper instrument panel with tractormeter was introduced, the design of the pedals was improved, more effective protection for the brakes was fitted, better seat suspension was added, and so on. But the most significant improvement was the two-speed power take-off. The two-speed power take-off was primarily intended to compensate for shortcomings in the gearbox and gear ratios, but it became something of a sales success. The number of speeds available for machines powered from the power take-off was doubled. This made it possible to exploit the higher available power output for threshing machines, or alternatively to have a lower engine speed, quieter running and better fuel economy with machines with a low power requirement. The Buster had successors in the form of the T 400 and T 430.

BM 320 B, 320 D (Buster)

Engine	specifications Volvo B18 C / Perkins 913
Cylinders	3 / 4
Cylinder capacity, l	1,78 / 2,5
Power, hk	37 / 37
Gears forward/ reverse	5/1 / 5/1

Wheelbase, mm	1950 / 1950
Operating weight, kg	1440 / 1570
Number made	
...1962-1963 (BM 320 B)	650
Production year	1961-1964
281	281



Bolinder-Munktell 350 (Boxer) / BM-Volvo 350 (Boxer)

Two red tractors were launched on 18 March 1959, one branded BM, the other branded Volvo. This model sold more than any other tractor in the history of BM and Volvo. The first series-produced tractor rolled off the line on 12 May 1959. The Boxer, which was newly developed in every respect, was a direct replacement for the BM 35/36. No effort was spared during the three and a half years of development to meet the new demands that had emerged. The 350 type designation refers to the three cylinders of the engine and the “50 hk (swedish horsepower)” output. One innovation on this model was the fully independent power take-off. As well as being an excellent agricultural tractor, some of which are still in use in the 21st century, it formed the basis of several products in the construction and forestry sectors.

The model became so popular that production had difficulty keeping pace with demand. Special designs were produced, such as the tricycle and the tandem, as well as tall portal tractors for use in vineyards. Counting only “proper” tractors, more units of the Boxer were produced by BM than any other BM tractor. The total number over nine years of production was 28 039 units. In addition, 400 PKD kits (partially assembled) about 10 000 chassis for forestry and construction machinery were produced. Most of these were for the LM 218 rear loader, but they were also used in the DR 631 articulated hauler “Grus-Kalle, (Gravel Charlie)” and its sister machine for timber haulage, the SM 665/667, known as “Timmer-Kalle (Timber Charlie)”.

350 (Boxer)

	specifications
Engine	BM 1113
Cylinders	3
Cylinder capacity, l	3,78
Rated output, hk	56
Gears, forward/reverse	10/2
Wheelbase, mm	2305
Ground Clearance, mm	490
Operating weight, kg	2370
Production no.	
-- BM 350	26815
-- BM 350 I	1224
-- BM 350 PKD	400
Production year	
-- BM 350	1959-1967
-- BM 350 I	1963-1967
-- BM 350 PKD	1964-1967



Bolinder-Munktell BM 425 (Terrier)

Tractors used to be designed so that the driver had to climb up to the seat from the back. By the time the BM 15 and its successor the BM 425 were launched, a different approach was used. With longer tractors, the driver's seat was easy to get to. The engine was the Volvo B 16 C gasoline engine. The standard version of the 425 had a differential lock. This was unusual and was a strong marketing argument.

1961 saw an important step in the development of the 425, with the new five-speed gearbox (from chassis no. 15001) and the Terra Trol hydraulic system. With Terra Trol there was no longer any need for support wheels on attachments carried by the hydraulics. Technically this was the same tractor as the Volvo T 425, but painted green.

BM 425 (Terrier)	specifications
Engine	Volvo B 16 C
Cylinders	4
Cylinder capacity, l	1,58
Rated output, hk	23,5
Gears, forward/reverse	4/1, later 5/1
Maximum speed, km/h	29, later 29,8
Wheelbase, mm	1915
Operating weight, kg	1350
Production no. including T 425	11193
Production year	1957-1962



Bolinder-Munktell BM 470, BM 471 (Bison) / BM-Volvo 470, 471

The diesel engines of the first series were upgraded for the BM 350 and BM 470. The engines were now designated 1 113 and 1 114. The output of the larger BM 470 was a remarkable 73 hk. The Bison, as the tractor was called, was also launched as “one of the most powerful tractors in the world”. This engine power was put to good use too, in heavy haulage with dumper trailers. The gearbox had five forward speeds and one reverse. In Sweden the Bison came with a safety frame approved by the Swedish National Board for Occupational Safety and Health, with an option to add a cab. A complete truck-type cab with space for two passengers was available. The total weight was 3 360 kg without safety frame and the wheelbase was 2 175 mm. The brakes were mechanical, fully-enclosed steering brakes which could be coupled together for braking on both wheels. When lots of power was needed on large farms, two Bison tractors were coupled together.

This gave a 140 horsepower (hk) four-wheel-drive machine with enormous tractive effort. The BM 471 Bison was BM’s first true four-wheel-drive tractor. It weighed 3 720 kg without

the safety frame. The 471 did not turn out to be a major seller, but around fifty were made during 1962-63.

The 470 Bison was also used to pull dumper trailers. This symbolizes the development from red tractor to yellow construction machines which began at that time. Even so, many more tractors would leave the Eskilstuna factory.

The Bison was also used as platform for the production of both industrial tractors (470 I) and forestry machines.

In the new designation system, the successor to the Bison was called T 800.

BM 470 / BM 471 (Bison)	specifications
Engine	Bolinders 1114
Cylinders	4
Cylinder capacity, l	5,04
Rated output, hk	
– BM 470	73
– BM 471	75
Gears, forward/reverse	5/1
Wheelbase, mm	
– BM 470	2175
– BM 471	2400
Operating weight, kg	
– BM 470	3360
– BM 471	3720
Production no.	
– BM 470	3695
– BM 470 I	474
– BM 471	50
Production year	
– BM 470	1959-1966
– BM 470 I	1962-1966
– BM 471	1962-1963



Bolinder-Munktell BM 400 (Buster), T 400 / BM-Volvo 400 (Buster), T 400

The BM 320's name Buster was so well established that it was inherited by its successor the 400 Buster. This machine was a new design, with its transmission dimensioned for industrial machines and to be able to take a more powerful engine. The gearbox had four forward speeds and one reverse which, with a high and a low ratio range, gave a total of eight forward and two reverse gears. With the closer gear ratios, the overlap between the gears became significantly better than before. The lowest ratio gave a speed of 1,8 km/h at 1800 r/min. One innovation was the driving-wheel-dependent power take-off. This feature meant that, with the tractor stationary and the high/low range selector in neutral, stationary machines could be driven at different speeds by selecting a suitable gear.

It was even possible to change the direction of rotation by engaging reverse gear, a feature greatly appreciated by anyone whose threshing machine or potato harvester had jammed. Blockages could easily be cleared and the machinery allowed driving in reverse. The 400 Buster had modern, enclosed disk brakes and Terra-Trol hydraulics. The increasing number of industrial and forestry machines meant that the system for machine designations need to be revised. T signified tractor, so Buster was called T 400. Between 1964 and 1969 more than 25 000 machines in the 400 series were produced. Of these, in round figures, 800 were industrial machines, 600 loading machines (LM 422), 550 forestry machines (SM 460) and 250 backhoe loaders (GM 410).

BM 400 (Buster), T 400	specifications
Engine	Perkins D 913
Cylinders	3
Cylinder capacity, l	2,5
Rated output at, r/min	2250
...DIN/SAE, hk	42,5/47
Gears, forward/reverse	8/2
Wheelbase, mm	2100
Operating weight, kg	1980
No. made	
...T 400 (1964-1969)	22 589
...T 400 I (1965-1969)	823
...T 400 PKD (1965-1966)	547
Production year	1964-1969



Bolinder-Munktell BM T 675 / BM-Volvo T 675

The yellow T 675 transport tractor was based on the Boxer tractor and the loader chassis of the LM 218.

BM T 675	1968 specifications
Engine	Bolinder-Munktell 1113 TR
Cylinders	3
Cylinder capacity, l	3,78
Rated output SAE, hk	60
Gears, forward/reverse	10/2
Maximum speed, km/h	25,2
Wheelbase, mm	2300
Operating weight, mm	3885