

Grassland Machinery



Manure Spreaders



Low Loaders and Tractor Equipment



Agricultural Trailers



MODERN **TRACTOR P5 SERIES**
PRONAR 5340

More than eight years ago we have begun to issue a quarterly PRONAR magazine addressed to Polish readers. It was well-received by the public. Soon it became very popular.

We've got favorable reviews by mail, e-mails and during face to face meetings with our business partners and clients. The magazine is about our production possibilities, successes achieved so far, and about the everyday problems faced by our team of professionals. The magazine has its own faithful readers.

After some time, we also began semi-annual issue in Russian. This issue is an inauguration of the biannual English edition addressed to English-speaking recipients. Poland is a member of the European Union for over ten years now. It implies that in many areas of our production we must apply EU regulations: the same safety standards, technical requirements, similar rules for certification and such.

We would like to provide English-speaking readers with the opportunity to get familiar with the most recent information on modern agricultural and utilities techniques, as well as on our offer. In the first issue we would like to introduce our company, point out its potential and capabilities.

We hope that the PRONAR magazine will prove to be an effective way to establish and expand cooperation with people and companies in countries in which the magazine will be distributed. Despite the problems some European Union's countries face, the European Union is the biggest market in the world in terms of national income.

Polish economy, although not without difficulties, is developing quite well. Pronar has its own successes too. We realize that in today's market companies compete with high quality and competitive prices. Our company tries its best to fulfill these requirements. In order to do so, we installed leading edge technologies and offer the most functional products.

Enjoy the reading



Sergiusz Martyniuk
Chairman of the Board, Pronar

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POLISH COMPANY WITH GLOBAL REACH

Pronar is a manufacturer of tractors, trailers, agricultural, municipal, forestry and road work machinery as well as variety of equipment for water management and melioration. It is also producing pneumatic and hydraulic components, sideboards and axles. The company is also one of the world's leading manufacturers of disc wheels appropriate for machines that are used in agriculture, construction, transport, municipal and forestry.

Pronar's headquarters are located in the village of Narew in north-eastern Poland (region of Podlasie). Its production takes place in six factories located in Narew and in the nearby towns. They manufacture more than 4,000 components, including 120 versions of trailers. Performance of their assembly lines is counted in millions of units. Products with the PRONAR logo on are sold on five continents.

In addition to divisions manufacturing the individual machines there are also those that - acting on behalf of Pronar - offer external services or provide the other producers with component parts. Wheels Division, Pneumatic and Hydraulic Division, Division of Plastics, Division of Axle Production, Division of Steel Profiles; all of these units manufacture products, which are bought by other companies as component parts for

their final products. Excellent quality of these elements is confirmed by long lasting cooperation between Pronar and those companies.

The priority is to provide the highest quality machinery and its components. The owners of the Company were determined to achieve its independence from most subcontractors and relay as much as possible, on their own production. All these, in order to make the product compatible with



the European norms and standards, and to allow possible innovative solutions and technologies to be implemented. For this purpose Pronar has built and has equipped Research and Development Center. In this center products with the PRONAR brand on pass series of tests and studies. Only reliable items are released to the market.

R&D Center provides services to third parties too. Due to the complexity and close relationship with Pronar's production facilities these services represent a completely new quality. Since the Center offers services from design through prototype, research and testing till the development of technologies and implementation of a new product for mass production. Such services are not offered anywhere else in Europe. The reason being, existing there research facilities specialize in very narrow fields.

The research program is based primarily on the technical requirements provided by European legislation and other international regulations. It also includes the introduction of the company's own research techniques developed





on an ongoing basis depending on the needs of tested products.

A very important aspect of Pronar's business activity is constant care for the natural environment. Therefore, the engines installed on tractors interfere as little as possible with the environment, and in many cases, they are characterized by better parameters than those which are enforced in the European Union. Pronar's machines work in such a manner so that the natural resources are sustained to serve next generations. As an example we may



On Petersen-Rickers, the German Pronar dealer's website: <http://www.petersen-rickers.de/pronar-anhaenger/>, we can read about how foreign visitors perceive Pronar:

It's amazing what changes took place in Pronar. I was here five years ago. Since that time, new factories were built, and they are equipped with top-notch equipment when it comes to production technology and painting. (...) In comparison to other manufacturers in all of Europe, which I have visited, the most advanced technologically is Pronar! (...) Pronar's rims go to manufacturers worldwide. Incredible how clean it is all around. You can eat off the floor here! (...) We are happy to have been working with this innovative company for 10 years now and that we have been able to sell more than 600 trailers and many other products of Pronar.



point out to the line of machines designated for work on swamps and wetlands.

Pronar is also engaged in commercial activities in the fuel sector. It is involved in oil and liquid fuels wholesale trading. The Company owns a network of gas stations. Besides that, It sales steel products to Polish and foreign contractors.

Pronar's products and services help people around the world to change their lives and environment for the better.

To learn more, visit our website:
www.pronar.pl



AXLES PRODUCTION DEPARTMENT

Pronar is a manufacturer of axles and complete sets of wheels for trailers with 2 to 24 tons capacity. Production of main components and assembly take place in Pronar's facilities, while other elements (such as bearings, seals, bolts) are provided by world renowned manufacturers.



Axles Production Division manufactures axles and drive shafts braked and unbraked with any type of connector, bearing and wheel track. The division is equipped with the most modern machine tools which allow to automatically control the production processes. Many orders are carried out with the active observation of the production process by the contractor.

Pronar's components are used in the agricultural trailers, and in a variety of other agricultural and municipal equipment, e.g. in the tillage units, baling presses, spreaders or sweepers. PRONAR brand axles are mounted on PRONAR trailers but they are also supplied to other manufacturers.

The wheel chassis systems, contain axles, suspension springs,

tires, rocker arms and pneumatic or hydraulic cylinders. All these elements are also manufactured by Pronar. It is a reason why the Company is able to offer competitive prices for its complete sets of wheels.

All Axles Production Division's products have been certified. The certificate is the basic document which permits use of the product on the European markets. The certification process was conducted by an external research institutes, with the participation of German Technischer Überwachungs-Verein, among others.



Information in English on Axles Production Department components' provides Kamil Pietruczuk, Spare Parts Specialist: tel. +48 85 68 27 268, e-mail: kamil.pietruczuk@pronar.pl

PROFILES DEPARTMENT

Pronar is the leader on the agricultural machinery market for many years now. Because the Company pays the utmost attention to product quality, Pronar's agricultural trailers are predominantly based on its own components, including sideboards.



Initially Pronar manufactured only these types of profiles which were used to mount its own trailer, and those which were most popular on the market. The new production line has allowed the Company to expand its assortment of sideboards called profiles "without sealant."

Pronar's sideboards find use in manufacturing of agricultural

trailers and bodies of delivery vans and trucks. Their manufacturing process is using steel coming from leading European steel mills. The division's offer is so broad that every trailer manufacturer using any type of profile may acquire the necessary one from Pronar.

Modern and fully automated production lines, allowed to adopt a number of strict standards

and use laser welding technology. It makes Pronar's profiles to be of the highest quality.

The modular design of production lines allows the creation of profiles with widths from 500 to 800 mm and with different thickness. The huge capacity makes it possible to satisfy not only its own needs, but also to extend the offer to other firms.

The presence at the biggest trade fairs (Agro Show Bednary in Poland, Zolotaja Osień in Moscow, Agritechnika in Hanover, Techagro in Brno) allows Pronar's traders to build lasting relationships with partners from all over the world.



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PNEUMATICS AND HYDRAULICS DEPARTMENT

Pronar's Pneumatics and Hydraulics Division is one of the leading manufacturers of pneumatic and hydraulic elements not only in Poland but in all of Europe. Its products are used in various industries: agriculture, transport, construction, forestry and municipal services.



Division produces hydraulic cylinders: - single-acting ram actuators, piston double-acting actuators with a 320 mm diameter and single and double-acting telescopic actuators. It also manufactures pneumatic and hydraulic elastic hoses (in low and high-pressure version, with straight and angular ends, in metric and inch systems), rigid hydraulic lines and compressed air tanks with a maximum working pressure of 1.25 MPa and a capacity of up to 100 m³.

Thanks to a modern machine park, set with highly specialized machinery and equipment (numerically controlled machining centers and fully automated grinding-polishing line) and experienced crew, the division is

capable to fulfill individual clients' orders.

Pneumatics and Hydraulics Division has its own painting shop too. It allows Pronar to offer its customers color paint finish customization and to maintain control over the process of paint application. That is why the paint finish is characterized by excellent performance quality and stability.

The Division has its own technology and design office with highly skilled and experienced designers and technologists who

specialize in product design, and in implementing new technical solutions in existing ones. It allows the Company to expand the production capacity of the department, propose alternative solutions in terms of the product's technical parameters and put into life customers' ideas.

The division is continuously improving machinery. It translates into high quality products. Pneumatics and Hydraulics Division's offer is extending with new solutions which are the response to the ever increasing demands of the market.



Pneumatics and Hydraulics Department

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WHEELS DEPARTMENT

Wheels Department produces wheels for agricultural, construction, municipal, and forestry machinery. Years of the department's existence that's continuous development and investment in modern production lines, which increased the quality and a range of offered products.



Division produces wheels from 12 to 54 inches in diameter and 36 inches wide in the most commonly used alloy wheels made out of 8 mm thick sheets and adjusted to a 65 km/h speed. The offer includes galvanized or powder coating wheels, as well as complete wheel sets with tires of any brand. Special wheels are also manufactured upon client's request. They are designed in accordance with individual customer's order by Pronar's engineers. Moreover, the production of the department includes the couplers for twinning wheels and sets of wheels coupled, as well as producing semi-finished products: wheel disks and rims which are supplied to other wheel manufacturers.

Pronar's presence on the biggest trade fairs, such as: SIMA Paris, Agritechnica Hannover, Golden Autumn Moscow, EIMA Bologna, Agro Show Bednary or Canada's Farm Progress Show and the ability to quickly adapt production and product range to customers' needs allows Pronar to build lasting trade relationships with partners from all over the world. PRONAR brand wheels have dominated the Polish market for a long time. They are also sold in other European countries as well as in the US, Canada, Brazil, South Africa, Morocco, Japan, China, Indonesia, Vietnam, Australia, New Zealand; the list is long.

Strong technical back-up and modern Tooling Department

makes it possible for the Company to create highly specialized know-how. Pronar's technology in terms of shaping and joining steel sheets is among the most advanced in the world, and the anticorrosion coatings based on nanoceramics, cataphoresis and powder coating meet the highest standards. Quality of the manufactured wheels and tire durability are tested in the Pronar Research and Development Center's Laboratory.

Pronar's wheels are constructed in such a manner to support the functionality of the machine on which they are going to be mounted. Today's level of technological advancement causes that it is not enough to manufacture the rim, 'matching' the hub, but you need to design the wheel in terms of the assigned machine, its parameters, working conditions, and the type of tire, on which it will be mounted. For this reason, a growing group of wheels produced by the Disk Wheel Division are the disc wheels designed for a specific machine model.

This progressive specialization determines that only the strong manufacturers of rims with the strong technical and intellectual back-up, are able to sustain their status of the supplier of global machinery manufacturers. Pronar certainly has a strong position among them. Many designs of the highest quality and technological advancement testifies to the fact.



Wheels Department

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PLASTICS DEPARTMENT

Plastics Division supplies Pronar with plastic parts used in manufacturing trailers, tractors and other machines. At the same time, modern machinery and experienced employees, make production capacity able to fulfill contractors' individual orders too.



Pattern-shop prepares prototypes of potential products. It is equipped with the most up to date machines (e.g. 3D printer) and a team of specialists with many years of professional experience mean that there are no jobs that are impossible to be implemented in production processes. On top of that the turnaround time is always reasonably short. Professional preparation and execution of

the mold (template) makes it possible to implement atypical orders (e.g. fancy shapes), even in small quantities. To carry-out complete details and products there are plastics of the highest quality available: ABS, PMMA, PC, ABS/PMMA, PE, PUR or other as indicated by the recipient.

The entire production process from the preparation and development of the project through

moulding till the manufacturing of the finished product is performed at the Plastics Department and this greatly reduces the costs.

Technologies used at the Plastics Department:

- vacuum thermoforming sheets,
- technical molding by pressing;
- welding tarpaulins,
- pouring and spraying polyurethane tarpaulins,
- rotational molding (rotomoulding),
- the application of resins (lamination)
- 3D printing.



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PARTS DEPARTMENT

Parts Department supplies components to almost every part of the world. Contractors and users of Pronar machines can use help of qualified professionals in the selection of parts, arrange for delivery, and receive advice on distribution and inventory optimization. Pronar's warehouses contain more than 40 000 different components.



A distribution system of finished goods plays an extremely important role in the modern company. For customers, the key issue is that delivery takes as little time as possible and it is least expensive. This is also essential in case of supplying Pronar's dealers with spare parts.

Storekeepers prepare hundreds of shipments with more than 40 thousand items

of spare parts every day. These shipments are bound for different countries on five continents. Each order is monitored so, that at any time, it is possible to provide the customer necessary information (the customer may check it her/himself) in reference to where the shipment is located at a particular time. In order to ensure the high quality of delivery process, its phases are

under constant monitoring (from the moment the item arrives to the warehouse till it's received by the customer.) Pronar's employees take photos of the packages which are being prepared for the delivery. This allows the company to resolve problems with courier service companies that do not meet quality standards. The customer may choose the means of delivery (road, air, sea).

Pronar's employees make every effort so that the customers can count on technical and logistic support, from the first run to the end of exploitation.



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NEWS



TRADE FAIR IN EISENACH



Łukasz Leśniak (second from the right,) Pronar Trade Deputy Director, presents customers with the cutter head GK140

Pronar presented its products at the largest municipal technology trade fair in Germany: demopark + demogolf, which took place from June 21st through 23rd in Eisenach.

Despite unfavorable weather, the fair was visited by 36.5 thousand

people directly related to the municipal sector: dealers, representatives of municipalities and local communities, companies involved in road maintenance, care of green areas, and golf courses. Pronar, for the first time presented its products during

the demopark + demogolf fair and as it turned out it was a big success off the Company. The reputation the exhibition enjoys and the number of industry experts, which visit the fair every two years at the Kindel Airport in Eisenach, were an additional incentive to present oneself at its best. At the 520 m² stand Pronar presented more than 60 machines and other products.

Visitors were particularly interested in the tractors PRONAR P5 series utility version and snow plows. The plow offer included a very well known plow PUV-1600, new versions of PUV M series plows, the latest segment plows in PUS-S a series, and the largest in the Pronar offer telescopic plow PUT-S58, aggregate with a lorry MAN TGM 18.230. On top of the latter, the newest spreader SPT-40 equipped with its own engine (so it can be



The visitors were particularly interested in tractors PRONAR P5 series, utility version

aggregate with cars not equipped in an additional hydraulic system) was also presented.

On Pronar's stand visitors could also find rotary snow blowers OW series, the spreaders PS series, and T130, the EPT-15 and HPT-25 models. The spreader HPT-25 was presented in aggregate with truck Unimog, on top of which a snow plough PU-S32H made of plastic was exhibited too. From among the machines for summer road maintenance a group of flail mowers BK and BBK series was exhibited, sweeper Agata series and multifunctional hoists - WWP500 and a new model WWT420 aggregated with tractors PRONAR 5340.

Such a wide range of presented products caused great interest among both existing partners



The largest Pronar's offer: the telescopic plow PUT-S58

and potential buyers who have not yet had a chance to become familiar with the Pronar's products. Quality, reliability and a very large variety of accessories, provide

the possibility of choice according to the individual customer's needs. Those are the most common opinions one could hear from the visitors. (hl)

RECYCLING AKTIV TRADE

From June 11th through June 13th in German town of Baden-Baden, Recycling Aktiv Trade Fair took place for the fourth time.

The exhibition takes place every two years. Each time, it gathers producers and distributors of machines and installations for recycling, from all over Germany and other countries. Therefore, Pronar's mobile drum screens could not be missing. Pronar's German trade partner Trump Technik, unveiled one of the most popular on this market sifter models: PRONAR MPB 18.47.

Thanks to modern technological solutions combined with years of experience in the pro-



The interest in PRONAR MPB 18.47 screen was so great that several of them were sold during the fair

duction of machinery, screener PRONAR MPB 18.47 provides high performance and work comfort. Both design and robust construction combined with affordability, attracted to the stand of Pronar's

German distributor, a wide range of potential users. The trade fair resulted in signing new contracts for the sale of mobile screens MPB series and establishing many new business contacts. (sk)

AGRA TRADE FAIR IN LEIPZIG



Agra in Leipzig is the most popular agricultural fair in Saxony

This year's Agra event was held on 23-26 of April in Leipzig, Germany. Amongst the presented agricultural equipment, valued on the German market, Pronar machines had to be presented.

The exhibition held every two years is one of the most popular in Saxony. On 100,000 m² exhibition ground more than 970 exhibitors from 14 countries showcased agricultural machinery. For many of them, Agra

in Leipzig is an excellent opportunity to present the modern agricultural technologies, developments in animal breeding and renewable energy, as well as in the management and consulting in the field of cultivation and food. Four days of the event were filled with farming machinery demonstrations, presentations of livestock and conferences.

At the Pronar German dealers' stands (Euro-Jabelmann, Volker Landgraf and Belimpex) there were trailers: T669, T671, T285, T046/1, T026 and T025M as well as PRONAR mowers: PDK220 and PDF300, and PRONAR rake: ZKP420 exhibited.

For the first time in Germany a modernized version of the 18-ton PRONAR T680 trailer was presented. Around the trailer, there were potential buyers constantly gathering, interested in the implemented subsequent improvements.



Livestock trailer PRONAR T046/1 was very popular among the visitors

(ig)



TRACTORS



The New Tractor P5 Series - PRONAR 5340

RELIABLE AND FUNCTIONAL

The new model of the Pronar's tractor is a response to increasingly stringent emission standards and ever rising customers' demands in terms of reliability, functionality, performance and relevant power. PRONAR 5340 complies with emissions standard Stage IIIA.

Motor selection for the tractor PRONAR 5340 was dictated by making the exploitation easy (no service of any catalyst) a high rate of uptime and reduced fuel consumption. The tractor is driven by over 100 horse power (maximum power - 106 hp) Deutz engine with a capacity of 3.6 liters with turbo charging and common-rail injection.

Deutz engines, the well-known and valued by farmers for its reliability, durability and low fuel consumption, for years has been installed in tractors and farm ma-

chines. The engine of the PRONAR 5340 tractor has a smaller footprint and it is more compact than previous models, enabling an improvement of visibility of the operator and an increase of the turn radius. In comparison with the same power engines that meet Stage IIIA standards, it is characterized by a greater torque with lower fuel consumption. The one-piece hood of the tractor can be raised high enough that all the important points that require servicing can be easily reached. Transmission

and hydraulic system have their own, separate oil admission. Oil tank capacity is 35 liters and pump capacity - 58 liters per minute. These parameters ensure appropriate cooperation of the tractor with machines that require efficient hydraulic admission.

On the PRONAR 5340 tractor ZF gearbox is mounted. Our Company is the world leader in the production of power transmission systems for agricultural machinery, trucks, cars and buses. Its long tradition, experience, and well as innovation determine the direction of the development for other producers.



Front linkage with a three-point suspension system offers possibility to use the tractor not only for work related to agriculture, but in municipal sector too



PRONAR 5340 tractor

Power shift system available as standard equipment, allows shifting leverage with the laden tractor without the necessity of using the clutch. Synchronized transmission with 16 gears forward and 16 reverse (two groups, four runs, two powershift speeds), gives you the ability to quickly adapt leverage to changing working conditions. Independent oil tank safeguards the transmission oil from contamination.

In the standard version, tractors are equipped with electro-hydraulic control system of a rear three-point suspension system EHR Bosch type. Large capacity of the rear three-point suspension system (4200kg) met and even exceeded the requirements placed on modern machines. It can also work with the tractors. PRONAR 5340 gives you the possibility to control the three-point suspension system from the outside, with a help of the buttons on the rear fenders. Multi-disc brakes (wet) are resistant to overheating.

In order to increase the tractor's functionality it can be equipped (on customer request) in the front three-point suspension system and power reception shaft, which allows it to be aggregated with one of the LC series Pronar frontal loaders' model. Another solution is to install in front of

the tractor 12 weights (45 kg each.) This excludes front aggregation (example: with loaders), but increases the pulling power and stability of the tractor.

The low position of the cabin and the widely opening doors provide easy access. Entrance to the cabin is comfortable and fea-



PRONAR 5340 Tractor with baler wrapper Z500



sible from both sides. The sunroof can be slightly opened. The rear window can be opened at a sufficiently large angle. The new electronic control panel is easy to read and allows complete monitoring of the tractor. The cabin is equipped with vibration isolation damper, which ensures very low level of noise pollution and increases operator's comfort. The comfort is also provided by adjustable steering wheel settings (height and angle) and mechanically sprung Grammer's seat, which can also be mounted in a pneumatic version (optional equipment).

In the standard version, the cabin of the tractor is equipped with a very efficient heating and ventilation systems, and for extra charge - in air conditioning too.

Przemysław Rogala
Foreign Trade Specialist. Pronar





**GREEN FORAGE
MACHINERY**





PRONAR PDD830C disc mower mounted on the PRONAR 7150 tractor

Mowers

MODERN AND FUNCTIONAL

Pronar manufactures mowers based on the latest materials and technologies so that they display the most functional characteristics.

The smallest of disc mowers manufactured by this Polish Company is PRONAR PDK220 - rear mower with cutting width of 2.2 m, classically suspended with five-disc working bar with 22 kW (30 hp) power demand and a weight of 380 kg. Other models of rear disc mowers, centrally suspended are: PDT260, PDT300 and PDT340. Thanks to regular adjustable hitch bolt PRONAR PDT260, PDT300 and PRONAR PDT340 mowers can work together with different types of agricultural tractors with II and III category three-point suspension system. The bolts also serve to correct machine alignment to the tractor hitch. The materials used in the construction of lawnmowers guarantee high strength and relatively low weight.

Instead of expensive mowers, Pronar offers the bilateral mower: PRONAR PDD830. It works well on farms with larger grassland acreage. The mowers consist of two cutter bars with a 3 m working width, mounted on one frame. Its mounting kit with a front mower with a working width of at least 3 m, 8.3 m mowing width can be achieved. From damage, due to collision with an obstacle, cutting unit is protected by the hydraulic shield, causing its elevation and movement away to the rear.

When mowing grasslands of high culture of cultivation, it is possible to increase cutting speeds up to 20 km/h, which makes PRONAR mower's cutting capacity to double. In case of PRONAR PDK220

mower it will be 4.4 ha/h and in case of PDT260 model - 5.2 ha/h. Even greater efficiency 6 ha/h can be achieved with the PDT300 and PDF300 mowers, and in case of the PDT340 mower, it can be even 6.8 ha/h. The biggest productivity - 16 ha/h can be achieved by working PDD830 mower (when bundled with a front mower of working width min. 3 m).

Pronar's mowers are characterized by high strength while ensuring good ground following and perfect mowing. Thanks to the wide range of deflections, work with these mowers on steep or uneven land is rather effortless. Central suspension and the possibility of pressure adjusting of the mower provides excellent ground following with

different types of substrate - both for soft, peaty soil, as well as for dry and hard soils.

With intention to facilitate the farmers' work in mind, Pronar equipped its mowers with so-called rippers, so that it is possible to shorten the time required to prepare silage several times. The device can be easily attached to or disconnected from the mower - depending on user's needs. Its function is to simultaneously loosen and windrow the fodder. Fingers placed on the conditioner shaft are made of wear-resistant steel windrowing forage with, and the metal scrapers form swath. Thanks to the fact that the waxy coating is destroyed, grass is drying faster, while providing a better quality harvest with high nutritional values. By means of a lever located on the housing conditioner you can control the intensity of aeration, adjusting it to individual needs.

Rippers have been already developed for PRONAR mowers PDT260, PDT300, bilateral mowers PDD830, and PRONAR PDF300 front mower.

The mowers are using a high-quality PRONAR cutter bars which enable very precise mowing.

Pronar's cutter bars' most important characteristics:

- thought-through construction, with reinforced gutter guarantees cutter bar's firmness and



PRONAR 5340 tractor combined with PRONAR PDF and PDT mowers

- excellent cooperation of placed inside the terminal disks;
- height of gears is increased (20 mm) and number of ground teeth guarantees that it moves significant loads, and provides quiet operation across the cutter bar;
- high-quality materials, all body moldings are made of, guarantee outstanding durability bars; (all elements come in direct contact with the ground and fodder therefore, they are made out of hardened boron steel);
- this original shape of the cutting disks which decreased cutting resistance and improved resistance to abrasion of disk elements; (the smaller the resistance, the less cutting power requirement during mowing. Optimized disk shape makes it so that the PRONAR bars, despite the larger working width, need as much power as cutting bars formerly used in PRONAR mowers);
- option of quick blade changing in drives;
- easy access to transmission components in disk drive, which is possible thanks to the steel skeleton with two screw covers. This solution eliminated the need to disassemble the cutter bar from the frame, if necessary, to lubricate linker joints or cleansing chamber from the remaining vegetable pices.

Beata Fiedoruk
Foreign Trade Specialist, Pronar



Willy Grevers of Aalten in Gelderland, the province of Netherlands:

- For several years now, I've been using a set of Pronar's lawnmowers: back - PDD810 and front - PDF290, which I bought from the Zonderland Company. A very good price-performance ratio of Pronar's machines encouraged me to purchase them. I also highly appreciate the practicality of these lawnmowers and I can definitely recommend them to other farmers.

Rakes

LIGHTWEIGHT DESIGN WITH HIGH-STRENGTH STEEL

Effectively carried out grassland harvesting is enabled by efficient, fast and accurate rotary rakes. Its main task is to form a shaft of mown and dry hay. It greatly accelerates execution of activities related to the preparation of good quality silage.

Pronar's rotary rakes meet the high quality requirements of forming shafts with mowed green fodder. Pronar manufactures the following models of these models:

- PRONAR ZKP300 – set with eight working arms with 3 m working width. Each arm is equipped with three double raking spring tines. The arms are mounted on a rigid suspension of the chassis, equipped with two pneumatic tires. The rotary rake power requirement is 15 kW (20 hp). Weight: 290 kg.
- PRONAR ZKP350 – set with nine working arms with a 3.5 m working width. Each arm is equipped with three double raking spring tines. The arms are mounted on a rigid suspension of the chassis, equipped with two pneumatic tires. The power requirement is 18 kW (25 hp). Weight: 315 kg.
- PRONAR ZKP420 – set with eleven arms with a working width



Single rotor rake PRONAR ZKP420



Double rotor Rake PRONAR ZKP800

of 4.2 m. Each arm is equipped with four double raking spring tines. Due to its mobile head, the rotary rake's active suspension equipped with a movable blade, has improved maneuverability and terrain tracking, as well as two shock absorbers that stabilize trajectory relative to the tractor. The axle system is equipped with four pneumatic wheels in tandem arrangement. The power requirement is 22 kW (30 hp). Weight: 504 kg.

- PRONAR ZKP800 is comprised of two rotary elements with a working diameter of 3.1 m arranged on a common carrier frame. These elements rotate in opposite directions. It allows stacking of fodder in one central

shaft. Rotary gear is equipped with 11 working arms, and on each arm there are four double raking spring tines. Rakes' rotary has its own tandem chassis coupled by means of bearing arms through cross - hinged system. It guarantees excellent ground tracing. Synchronized hydraulic cylinders consist of supporting arms, resulting in a smooth adjustment of the rake's working width in the range from 7 to 8 m. By adjusting the working width, we adjust the fodder shaft's width from 0.9 to 1.9 m as well. The ZKP800 rake is equipped with modern dry rotor transmission of Pronar's design.

Rakes manufactured by Pronar increase mechanization

of animal feed production. It significantly reduces the amount of hours of work required on the farm, and at the same time it shortens the time of green fodder harvest. This is made possible, through: rotary gears of highly regarded manufacturer, raking tines made out of highstrength steel and a good active suspension, which improves maneuverability and ground tracing. Built-in to Pronar's rakes vibration dampers are significantly increasing work comfort. Appropriate cleanliness of fodder and possibility to fully adjust width of fodder shafts makes the subsequent baling easy.

Katarzyna Żukowska-Matuk
Foreign Trade Specialist Pronar

Changes in Bale Wrappers PRONAR Z245 and PRONAR Z245/1

EFFECTIVE PASTURES MANAGEMENT

For cattle breeders, the proper pastures management and use of green fodder for silage production in such a way that it is of the highest quality feed, is very important. European farmers being aware of the dangers of climate change, opt for silage in bales that are more efficient compared to silage from the clamp.

As experience has shown, preservation of feed wrapped in foil bales is the least labor-intensive method and the least dependent on weather conditions. It is also the most economically feasible. Feed preserved in bales is characterized as easy to mix with other ingredients and exhibiting a relatively low storage and transportation costs. In addition, the production surplus can be easily sold, bringing the household an additional income.

Compressed into bales feed requires foil wrapping. For this purpose,

PRONAR Z245 and PRONAR Z245/1, self wrappers can be used.

The PRONAR Z245 wrapper is designed for households with medium and large grassland. Its standard equipment includes:

- loading arm, allowing for efficient bale loading on the wrapping table, which eliminates the need to use a second tractor with a loader;
- foil tray adapted for wrapping widths of 500 and 750 mm with a built-in transmission that provides the appropriate tension;

- a rotary table for bales wrapping with a diameter of 1000 to 1800 mm;
- the hydraulic off-film mechanism;
- discharge table allows you to unload the bale in two ways. The first one, is bale rolling on cylindrical surface behind the wrapper while leaving the swing frame. The second, after picking up the side tipping support, is bale setting on the side. It significantly reduces the likelihood of damage done to the film during landing and allows for better gripping the bale by front loaders, commonly used in agriculture;
- hydraulic engine, protected with the so-called anty-shock valve that drives the rotary table with the roller;
- mechanism for controlling the manifold hydraulic valve with a strand from the tractor (makes it easier to operate the machine without leaving the trailer's cab);
- exterior lights, allowing safe movement on public roads. Electrical installation of the wrapper is designed to supply the current generator of 12 V through proper wire connection;
- wrapper counter L-01 should be powered by a battery;



PRONAR Z245: The self-loading wrapper with a side-loading

- solid tyre measuring 340/5-16, ensures adequate mobility in waterlogged meadows.

The customer can order a wrapper PRONAR Z245 with electric control system (optional equipment), which in great extent reduces wrapper's preparation time for the next cycle of wraps. The control system allows:

- to manually turn on the wrapping operation, to program a specific number of wraps or to manually control the process with the button on the console;
- monitoring progress of the wrapping process on the display;
- manual wrapping off at any time;
- information displayed on the completion of the wrapping process combined with the buzzer;
- precise automatic setting of the rotary table for the wrapped bale unloading operations and its loading after having enabled the wrapping;
- counting the number of wrapped bales on the certain field with the ability of resetting the counter for each field independently;
- measurement of working time on the field with the ability to reset the counter for each field separately;
- efficiency measurement of the average number of wrapped bales per hour with the ability to count separately on one, two, three or even four fields;
- display the total number of wrapped bales from the moment of the control system installation on the wrapper (non-resettable value);
- working wrappers' emergency stop, e.g. in case of lack of the film;



PRONAR Z245/1 - the self-loading wrapper with a front loading

- cutting off the wrapping table drive system in the event of improper table settings with the displayed information on its wrong positioning, preventing from wrapping.

PRONAR Z245/1 is a self-loading bale wrapping system with front loading bales. Loading bales on a rotary table is carried out in such a way that we drive up to the side of the bale, and not as in the case of PRONAR Z245 wrappers - to its front. This reduces loading time because the wrapper is moving in the same direction as the baler (along the field).

Loading is performed with help of a special bales' gripper consisting of two cooperating arms. The first is the gripping arm, which is responsible for gathering the bale from the field, its proper positioning and stabilization. The second arm is responsible for loading previo-

usly captured bale on a turntable. Each of the arms is driven by a separate hydraulic cylinder. The hydraulic system was designed in such a way that the arms during loading and bale lowering perform independent movements. There is a possibility of adjusting the gripper arms according to the bales' width.

The unloading of wrapped bales from a turning table is done with help of the discharge mechanism. The tipping frame of the mechanism is lifted by a hydraulic cylinder, which pops up automatically when lifting the rotary table. The mechanism design allows only such settings that it raises bales only on the right or only on the left side.

Automatic loading and unloading reduces wrappers preparation time for subsequent wrapping cycles.

Katarzyna Żukowska-Matuk
Foreign Trade Specialist Pronar

Forks, Buckets, Grippers

ALWAYS USEFUL

Pronar, in addition to tractors, trailers, machinery for harvesting green fodder or municipal equipment, is also manufacturing cooperating with tractors front loaders and a large number of high quality accessories.

Thanks to hard work of team of skilled engineers, its own metallurgical back-up facilities and Pneumatics and Hydraulics Department, Pronar produces accessories which are of the highest quality and are most functional. They are the kind of accessories that are used in each and every farm, dealing with crop or animal husbandry. Keeping cleanliness in maintenance rooms, forming piles in the manure pit, manure loading on top of digging reel, fertilizers and lime into distributors, crops on trailers, moving straw, hay, silage, collecting stones from

the fields, poking grain in stock. These are just a few of the tasks which become easier and safer with the help of Pronar's accessories.

Pronar's loaders can be divided in terms of the size and power of the tractor, which they are to be aggregated with and due to the type of mounting system it is equipped with. Four models of loaders are equipped with euro type mounting system (LC2, LC3, LC4, LC5) and one model with the system of which Pronar is the copyright holder (LC-1650). Thanks to use of the euro type mounting, loaders

are designed to work with accessories supplied by other manufacturers too, this makes them universal. Accessories are produced from the highest quality materials, which make them dependable even under harsh conditions. It guarantees durability and reliability.

Silage Cutters (WK1.25, WK1.25E, WK1.25W, WK1.25EW, WK1.25SMS, WK1.25SMSW, WK1.5, WK1.5E, WK1.5W, WK1.5EW, WK1.5SMS, WK1.5SMSW) with different mounting systems are characterized by a compact and robust



PRONAR LC3 with silage cutters



PRONAR LC3 with balle loader

design. Thanks to use of two cylinders cutting even heavily compacted silage is quick and easy. The mechanical scraper further facilitates unloading on the substrate.

Manure Forks (35WO, 35WO1, 35WO2, 35WO3, WO-12E) are designed for loading manure, compost or mulch. To a large extent they facilitate and accelerate the manure removal from the barn. Level teeth of the tool are screwed to the lower part of the frame. Forks of 1.4 m width have 7 horizontal teeth and 1.9 m wide forks have 9. In addition to working width, the individual forks are widely differentiated between themselves by different kind of hitch to a loader. It allows the customers to choose a suitable mounting.

Manure Grippers (CO12E, 35CO, 35CO1, 35CO2, 35CO3, 35CO4, 35CO5) are equipped with the gripper system crocodile type. They are also used for compost or mulch loading. In the bottom frame beam of the gripper, horizontal teeth are embedded, over which tilting frame with vertical teeth is working. Depending on the model, one or two hydraulic cylinders are used, therefore keeping the aspect ratio of the accessories' weight and force required to perform a task.

Pallet Forks (35WP, 35WP1, WP-25E) are, of course, for loading and unloading pallets. They are useful not only on the farm, but everywhere where precise, quick and safe handling of large loads is necessary. The strong frame, a simple mechanism changing paws spacing (every 60 or 90 mm - depending on the mo-

del) and versatility are the most important advantages of this product.

Bales and beams Grippers (35CB, 35CB1, 35CB2, 168CB, 168CBE, 168CBS) are designed to work with cylindrical and perpendicular bales as well as with round bales. It does not matter if the bales are foiled or not - rounded edges and a smart design protects the load against damage. Depending on the model shoulders clamps tighten hydraulically or move relative to each other on special slides.

Logs Grippers (CK, CKE) are mounted in the middle of the slideway of the pallet fork. In the upper part of the frame there is movable arm controlled by a hydraulic cylinder. This equipment facilitates loading and unloading wooden logs or similar materials.

Volumetric Buckets (CV24, CV24E, CV24S) are characterized by robust and tight construction, the use of wear-resistant materials (Hardox steel) and equipment with slicing-separating plough. They are very versatile and useful for loading, unloading and short distances transportation. Volume - 1.26 m³.

Multi-purpose Bucket (CW-18E) is designed for loading and unloading, transport over short distances, snow removal, dozing, grading and of various materials cutting. This is possible thanks to strong design and cutting knives in the side walls of the upper part of the hydraulically opening bucket.

Buckets for Bulk Materials (35C15, 35C15E, 35C18, 35C18E, 35C20,

35C20E, CM15E) are suitable for loading of earth, sand, fertilizers or grain. Capacity from 0.3 to 0.8 m makes it possible to match the model to the specific needs of each user.

Gripping Buckets(CHC15, CHC15E, CHC18, CHC18E, CHC20, CHC20E.) Their sophisticated design with hydraulically lowered openwork device allows the loading and unloading of bulk materials (seeds, sand), loosely tightened (manure, silage) and volumetric (sawdust, garbage, biomass).

Scoop to Root Buckets (COK20) is an excellent solution for farms focused on the production of potatoes, beets and other root crops. Robust design and universal mounting

system is the most important of the product's benefits.

Big-bag Lifting Sling (ZB10) useful in the transport of bulky bags, for example: with animal feed or with semi-finished products in manufacturing plants. Simple, robust and reliable design.

Pronar's attachments are universal - it can be aggregated with all sorts of loaders and extension arms. It is used in agricultural work, municipal, construction, road and forestry. They are distinguished by thoughtful technical solutions and the highest quality materials used. Certainly, they will accelerate and facilitate the work of their users.

Helena Landowska
Marketing Specialist. Pronar



PRONAR LC3 with balle loader

A close-up, low-angle shot of a row of bright orange municipal machinery units, likely snowplows or street sweepers. The units are arranged in a line, receding into the background. The focus is on the front of the nearest unit, which has "PUV 3300" printed in black on its side. Various mechanical components, hoses, and safety labels are visible on the machinery. The background is slightly blurred, showing more units and some greenery.

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**MUNICIPAL
MACHINERY**



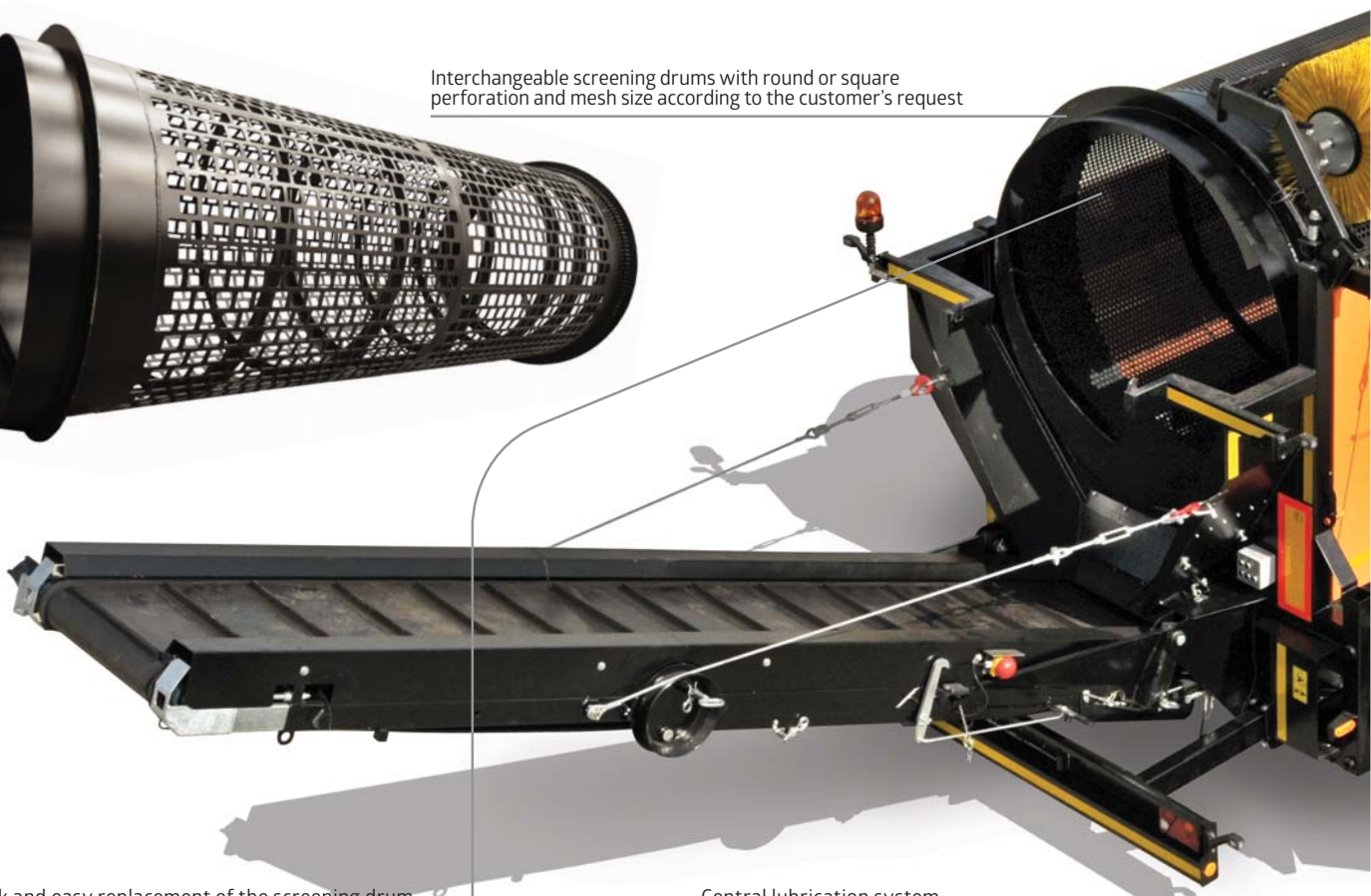
Trommel Screeners

MOBILE AND VERSATILE

Pronar manufactures the following mobile drum screeners: MPB 14.44, MPB18.47, MPB 20.55 and MPB 20.72. They are equipped with screening drums of 1.4 to 2 m in diameter and lengths from 4.4 to 7.2 m such a wide offer let's you find a suitable model that will match your personal needs.



Interchangeable screening drums with round or square perforation and mesh size according to the customer's request



Quick and easy replacement of the screening drum



Central lubrication system





Drum cleaning brush - raised and lowered hydraulically



Reinforced tape - Hopper Feeder



Control panel - functional and easy to use

Screeners are licensed and allowed to move around on public roads at speeds up to 100 km/h



The engine and hydraulic system are positioned on a rotating frame, which ensures easy access while servicing the machine





PRONAR MPB 20.55 trommel screener sifting bio - stabilizers



PRONAR MPB 20.72 trommel screener sifting soil



PRONAR drum screeners MPB series that's an offer addressed to companies and entrepreneurs involved in the area of waste management and in renewable energy sources. Four models with screening drums of a diameter of 1.4 to 2 m and lengths from 4.4 to 7.2 m. It is an offer in which everyone will find the machine right for them. All mentioned drum screening machines can be used to: compost, wood waste, mulch, peat, construction waste, rubble, stones or clay screening.

Thanks to mobility (ability to travel on public roads at speed

up to 100 km/h); trommel screeners can be used for field work, for instance: to liquidate waste dumps, sifting the ground from excavations or peat for the lawn establishment.

The largest screener PRONAR MPB 20.72 has sifting drum of 7.2 m length. Keeping the mobility of the machine while using such a long drum was made possible thanks to the coupling connections. It is simple to drive a coupling tractor and hook up trommel as a regular trailer. Other models are suitable to be hooked up with tracks (or other machines)

with a standard hitch. In addition, the machine may be equipped with a special hitch ball, which increases its ability to aggregate with other types of machines. A great advantage of Pronar's drum screeners is their mobility. Overall dimensions provide the ability to transport equipment on public roads without additional licensing. EBS brake system (standard equipment) gives an additional guarantee that the driving is going to be comfortable and safe. Different performance of each of the four sifters allows choosing the machine so that the en-



PRONAR MPB 18.47 screener sifting gravel

tire sorting line is used in 100%. All screeners MPB series are equipped with a central lubrication system. This allows you to significantly reduce the time it takes to service the machine and thus more efficiently use the screener.

PRONAR screeners are a modern devices equipped with an easy-to-use control panel. The operator can set the desired parameters very quickly (rotational speed of the drum, tape speed in the charging hopper) and start working. Each of the machines can be adapted specifically to the customer's needs, thanks to a wide range of optional equipment.

The lattice mounted at the request of the client over a charging hopper works well during the preliminary feed segregation. It eliminates the possibility of getting large and heavy elements into the machine, preventing any damage and ensures trouble-free operation. A trellis is a kind of fuse, which protects against damage to the elements of the sifter. Raising and lowering of the lattice is accomplished by radio with remote control, which can be placed for example, in the loading machine.

Additional magnetic and (or) air separators allow to eliminate

unwanted particles from segregated material. For example, metal elements from debris or aggregate (using magnetic rollers) and small pieces of plastic from sorted municipal waste (air separator).

Very wide application of this type of machine requires an individual approach to each client. Therefore, Pronar constantly increases the number of accessories and optional equipment to choose from, trying to meet the expectations of each and every customer.

Łukasz Śliwski
Foreign Trade Specialist, Pronar



PRONAR MPB Screen's Replaceable Drums

THE VERSATILITY OF APPLICATIONS

PRONAR manufactures four models mobile drum screens that work perfectly in the construction industry, waste management, mining, and biomass and compost separation.

Such flexibility requires from the manufacturer to use high quality components, from amongst which a key component in terms of the screeners is the replaceable drum. An appropriate choice of the drum gives the opportunity of using the machines for different fractions of waste. It also has a significant impact on the effect of their separation process.

It allows you to reduce costs, shorten the time needed for an effective segregation and recovery of material, and depending on the profile of the company application of different drums may also increase the range of its offer and raise the competitiveness of the firm.

PRONAR screening drums are produced in four sizes and are

mounted in: MPB 14.44, MPB 18.47, MPB 20.55 and MPB 20.72 models. In addition to the Pronar's machines, they can also be successfully used in the other brands screeners.

The smallest of the drums with a diameter of 1.4 m is demanded among companies with smaller capacity (composting host to 1500 tons of waste per year). In this case, an important role plays lower cost of ownership and transport. The smaller size of the drum and the machine gives an opportunity to use sifter on smaller surface, on which it was not possible previously without incurring the cost of increasing the site on which the business is to be conducted.

The best selling model is MPB 18.47, in which the maximum rotary speed is 23 rpm, and the effective surface of the sifter, more than 22 m². Such parameters of this model of the rotary drum screen enable segregation efficiency of 30-40 tons of waste per hour. In the case of the more easily handled





Different types of perforations K (square)

material (e.g. soil) performance may reach over 100 tones per hour. Such efficiency of separation of the various fractions is unattainable without the use of screens.

Thanks to more efficient recovery, the use of screens allows to greatly reduce the fees for the environment use. Properly used sifter can reduce costs by 30 percent.

PRONAR screening drums are available in sizes from 2 m up to 7.2 m and a diameter of 1.4 to 2 m and the effective surface of the sifter from 16.2 to over 40 m². Therefore, the type of the drum can be adjusted to the appropriate capacity, which we want to achieve.

The larger size of the drum allows you to increase its separation efficiency. Drums with dimensions of more than 5 meters long and 2 meters wide are used as a part of the sorting line, for instance, in the alternative fuels production. They may be used in screeners purchased earlier and working stationary as part of the sorting line and this way to raise their efficiency.

The maximum rotational speed in case of drums of up to 4.7 m and a diameter of 1.8 m is 23 rpm, and larger once-19 rpm. Pronar's drums screeners Exchange made easy means the possibility to use a variety of mesh sizes of sifters and of thickness of the drum plating. The differences in the dimensions of mesh and the thickness of the drum plating allow you to process all sorts of waste or material while using the same machine. It will increase your savings in the waste management and material recovery industry.

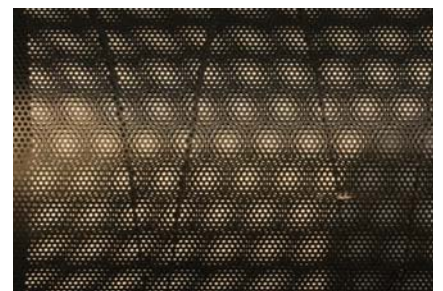
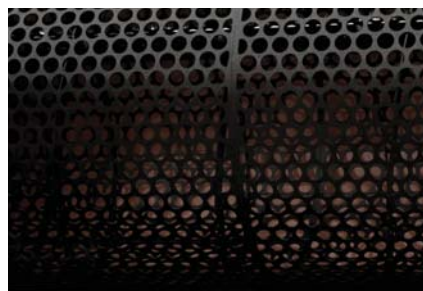
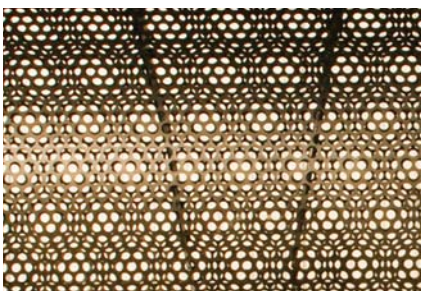
Rubble, gravel or biomass requires different size holes and other plating thickness of the drum. If we use an appropriate sieve we can count on best performance and savings due to faster and more efficient management of the sorted material and trouble-free use of the machine.

For this reason, the buyers of the PRONAR mobile drum screeners would normally decide to

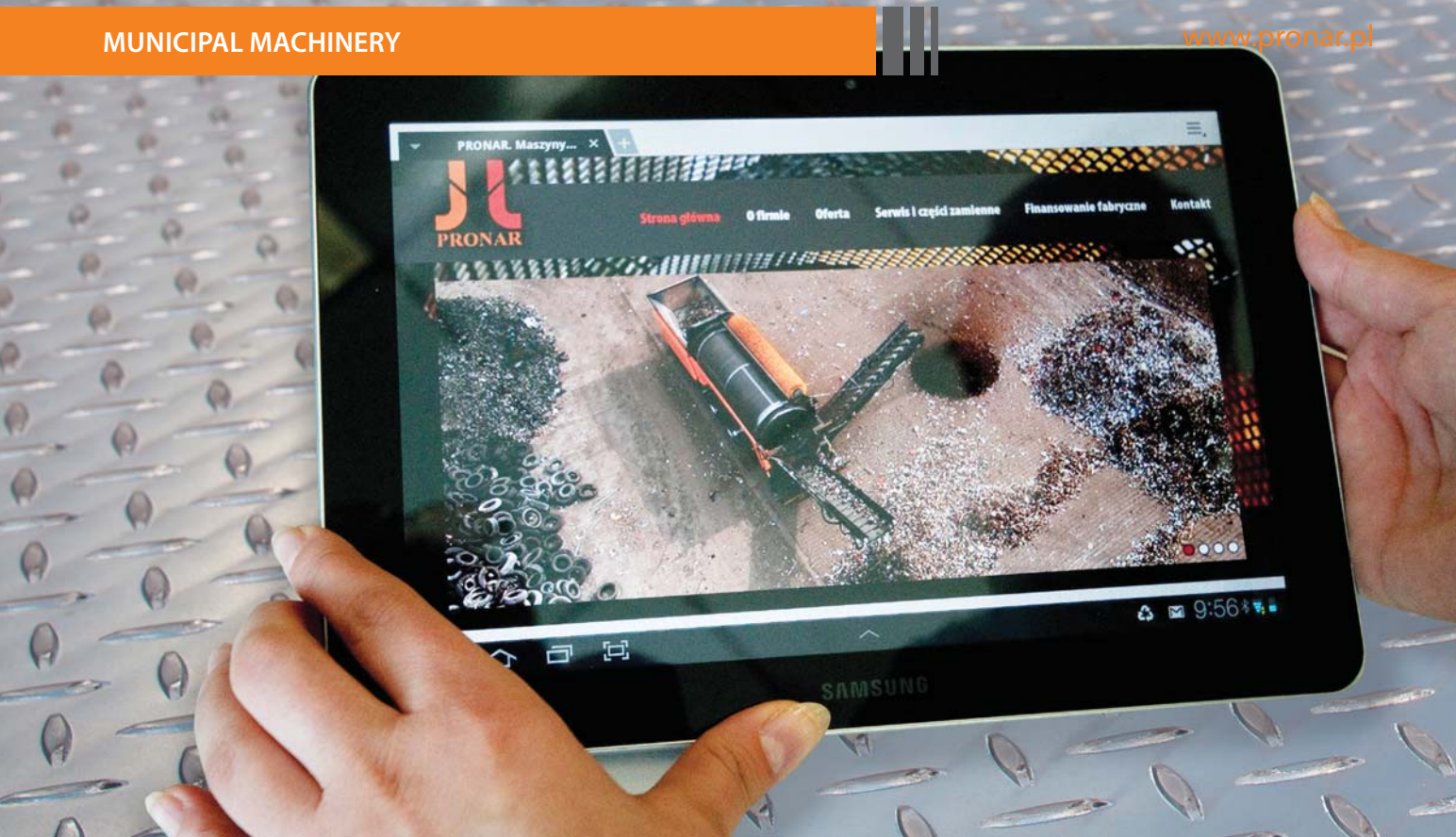
purchase it with two or three types of screening drums. In the case of soil and biomass, it requires less of the thickness of the metal plating drum sheet than in the case of rubble. In turn, gravel and soil require the smallest mesh size. In addition to the standard offer, the client may also request a drum with customized mesh.

PRONAR mobile drum screeners are appreciated by both experts (two gold medals of the Poznan International Fair 2014), as well as by users. They work almost in all of Europe, contributing to a better utilization of organic materials and to the protection of the environment. More information on trommel screens and Pronar's extended offer of these machines is available on our website: <http://www.pronar-recycling.com>

Bartosz Tomczak
Foreign Trade Specialist, Pronar



Different types of perforations O (round)



Website Dedicated to Recycling

www.pronar-recycling.com

PRONAR has launched a website dedicated to recycling. Dynamic development of the municipal economy has resulted in increased demand for machinery and equipment that supports the sector.

On www.pronar-recycling.com under the various tabs: „tender”, „service and spare parts”, „factory” and „financing” visitors may find comprehensive information relating to specific topics.

In a transparent manner all models of Pronar’s mobile drum screeners are presented, a way of financing the purchase and service system. You may also view the presentation on the achievements of our company (a new factory equipped with modern machines and equipment, where manufacturing of 4. thousand trailers, machinery, equipment and other items, takes place.) You may learn about the capabilities of PRONAR brand machi-

nes by watching films presenting their work.

In the section „Trommel Screens” „Products” there is the most important information about the individual models of Pronar’s mobile drum screens. Section „Drums” presents sample pictures of several sifter drums, a list of their shapes, the size of the perforations and wall thickness.

In addition to the technical data tables and available standard and optional accessories list, the machine model is presented with the possibility to rotate virtually 360°. The presentation is supported with interactive pictures of moving parts, which enables accu-

rate viewing of the machines, and even go inside.

The „Contact” tab, in addition to the direct contact information it also provides the entire European distribution network of PRONAR mobile drum screens.

The site can be viewed in four languages: Polish, English, German and French. It is supported by most popular Web browsers, such as internet explorer, Mozilla, Google chrome and opera. You can visit the page, also with mobile devices (Smartphone, PDA, and tablet) running android.

Sylwester Kundzicz
Foreign Trade Specialist, Pronar

The Drum Screening Machine

SHOW IN FRANCE

At the beginning of April in France, nearby Grenoble at Lely Company, a showing of the MPB 20.55 screener took place.

The firm deals with the recycling of different materials for more than 70 years and it is one of the largest in this industry in France. The show was held on the occasion of the National Conference on recycling with the participation of the biggest French companies in that sector of the economy and many dealers.

Mobile drum screener PRO-NAR MPB 20.55 was presented on a processing line with grinding machines. The material on which it worked was biomass and wood shavings. Observers expressed the approval of the sifter's performance parameters and quality of its construction. The presentation was very successful and ended with orders of subsequent machines, which will soon be working in France.

During the show there were Pronar's employees and the representatives of F2MC - Dealer Company and HES-sub Dealer Company in the South of France.

Radosław Puciaty
Sales Representative, Pronar



Rear-side Mulchers

TIPPING STRIPS OF GREENERY

Pronar's BBK series mowers are intended for mowing strips of greenery and roadside ditches.

Lawnmower BBK series can work with tractors of not less than 50 HP. Machines have special pantographic suspension, which enables them to work on a sides, and in the back of the trailer. Hydraulic mechanism allows for maximum lawn mowers' horizontal shift of about 1820 mm, it means easier maneuvering in

between the trees, posts, or barriers along the road without altering the track.

A very important feature of this series of lawn mowers is the ability to work horizontally. The angle of the head shall be between 94° - 65° . This allows you to mow virtually all ditches and road edges. Head setting at 94° ensures the possibility of using these machines for work by live fences.

Changing the cutting height is not a problem either: just screw the clips to the selected height (20, 40 or 60 mm), and the copying shaft (responsible for guiding on the ground and tackling surface inequalities without blocking the work of the entire mowing system) will be in control of this parameter. When we work in the field, then very often we come across all sorts of obstacles, which we are not able to notice in time. In case of ordinary lawn mo-





wers such a clash may have a lot of unpleasant consequences: from bending lawn mower or destroying the obstacle and finally severe damage to the three-point suspension system on the tractor or the tractor itself. That's why the BBK lawnmowers have mechanical protection against such events. The principle of operation of this system is simple-in case of colliding with the barrier device rises slightly to the top and slopes to the back.

The needs of companies involved in maintenance of the green areas put in front of the manufacturers very high requirements in terms of durability and product quality. In construction of BBK lawnmowers series of solutions were applied. They have a significant impact on their lifespan, for example: the double coat on the working chamber. Its upper surface is made of high-quality steel, the bottom one-of wear resistant

steel. The lower mantle is mounted in such a way as to facilitate the rapid exchange in the event of a failure. Working element of Pronar lawnmowers. Are so called knives-hammers (heavy elements-rams, sharpened at the ends, made of very high strength cast steel).

Łukasz Śliwski
Foreign Trade Specialist, Pronar

Rear-frontal Mulchers

THEY MOW AND GRIND

Mulchers are just perfect for maintaining the green areas in the cities, roads and their surroundings, large tracts of meadows, as well as at clearing terrain covered with wild plants and weeds.

The main advantage of these machines is the possibility to leave a crop residue on the cleared ground. This is a great natural mineral fertilizer, which improves the appearance and quality of the turf. Flail mowers mow and at the same time grind down

the mowed material, spreading it evenly across the cleared surface. You can use them to grind bushes, small trees, branches and scraps of cutting treatments.

Rear-front mulchers series BK are universal machines. Design of power transmission system and

suspension makes aggregation possible in both the front and rear of the suspension system. To aggregate equipment at the front, the media must be equipped with a front PTO and three point suspension system. Adjustment of working position is done by unscrewing clamping



Mulcher PRONAR BK140 with PRONAR 5235 tractor



Mulcher PRONAR BK180

screws and rotating the attachment 180°. The driving gear is equipped with two power take-off shaft wells. Frontal power take-off shaft, depending on the manufacturer, may work in two directions-to the right and to the left. PRONAR predicted the potential problem, which the users of various tractors may encounter and came up with a solution - to adapt the machine to work with opposite turns, you just need to unscrew and turn the gear 180°.

Pronar's BK series products are equipped with a hydraulic feed mechanism in a vertical plane. Cutting system-depending on the model- can be moving in the range of 440 to 785 mm. This makes it easy to maneuver a mowing set between columns and trunks and to steer clear of any obstacles. Control of all of the work parameters is done from the

cab of the tractor, which significantly affects the comfort of the operator. Changing the cutting height is not a problems either-just screw the slides to the required height and the copying shaft (responsible for guiding on the ground) will be in control of this parameter during the work.

In the design of BK mowers a range of solutions to enhance their reliability was implemented. For example: the double coating of the working chamber. Its upper surface is made of high-quality steel, a bottom-wear of resistant steel. The lower mantle is mounted in such a way as to facilitate the rapid exchange in the event of a failure. Pronar BK series mowers' working element is revolving hammers. They are made of a very high strength cast steel. They are fixed on a thick shaft tube made of canvas that is embedded on

the strengths of spherical roller bearings.

BK series mowers, due to the wide range of applications, ease of operation and special design are very useful on horticultural farms and in municipal companies.

In the new upgraded models of lawn mowers series BK and BBK (with M sign) different type of knives can be optionally mounted (other than hammers rams)-an arrangement of knives of the „V” type in the „/ \” configuration or layout with extra middle knife (aeration of mowing area) the so-called „chicken foot”- shaped/ \. Knives of this type accurately break up the mowed plants thus effects of mowing meadows, in parks or in other major green areas in need of care are much better.

Łukasz Śliwski
Foreign Trade Specialist, Pronar

Tow Sweepers ZMC 2.0 and ZMC 3.0

FOR CLEANING UP LARGE SURFACES

Next to the sweepers that are hitched to tractors and multifunctional machinery, Pronar is manufacturing also efficient tow sweeping machines ZMC 2.0 and 3.0 ZMC. They have been designed for effective cleaning of large areas, such as roads, sidewalks, squares, and parking lots or narrower than usually streets.

Sweepers PRONAR ZMC 2.0 is designed to cooperate with agricultural tractors with minimum power of 60 hp, equipped with a rear PTO of 1000 rpm speed. Sweeping set consists of two disc brushes powered by hydraulic motors which direct rubbish to the inside of the machine, where a vacuum suction system moves the trash to the tank.

Pollution Chamber with a capacity of 2 m³ is enough for an extended work without interruption in order to empty the tank. Sweeper has a hydraulic lifting

and empty garbage of the tank directly into the container or trailer. The sprinkle set consists of a sprinkler pump and water tank (with a capacity of 240 liters), and sprinkle nozzles, which effectively prevents the formation of dust during operation. Hydraulic drawbar coupling allows for the proper conduct of the sweepers at the curb. The work of the machine is controlled electronically by means of portable console, which is located in the cabin.

In ZMC 3.0 sweeper other than in the ZMC 2.0 design of eli-

mination and moving mechanism is used. In this solution there is no vacuum suction system created by the fan. Pollutants are swept by the system of the two disk brushes and then by rotating cylindrical brush that moves them onto the conveyor belt. Then they are routed to the internal tank. A reservoir with a capacity of 3 m³ is flushed with help of hydraulic cylinders without necessity of leaving the cab of a tractor by the operator. The ceiling of the emptying of the tank is 2200 mm. When emptying the container additional supports are pushed out. They stabilize and prevent tilting of the machine. Landing stage is accompanied also by sound and light (located at the top of the sweepers warning light) that warn against moving the landing zone.

Custom sweepers can be equipped with a vibrator, which puts into vibrations the tank for easy emptying of the deposits. Disc brushes with the regulating mechanism, which is facilitated by the indicators of their angle of slope during sweeping, placed in front of the sweepers and clearly visible from the cab. Setting the more frequently used brush is done through the hydraulic system too. As an optional accessory an extra hydraulic control of the left hand brush is available. It is possible to equip the sweepers ZMC 3.0 with working lighting to



Disc brushes furnished with regulating mechanism, which is facilitated with their slope angle indicators during sweeping



ZMC 2.0 sweeper with PRONAR 5340 tractor

increase the visibility of the working area of the drum brushes. Undoubtedly, it is convenience. ZMC Sweeper 3.0 is also equipped with a sprinkler system, which includes: water tank (1150), water pump and four nozzles. Nozzles are placed in front of all the brushes and over conveyor there is the sprinkle beam mounted. All this prevents from dust forming during the sweeper's work, as well as by leaving a wet surface, also after its completion. The angle at which sweepers' ZMC 3.0 drawbar is tilted

is controlled hydraulically from the operator's cab. This allows you to set it in such a position to make sweeping easy, for example: close to the walls of buildings, curbs or bus bays.

An element which increases security is service flaps with sensors. In the case they are opened system prevents unwanted launching of working items, protecting the operator or service technician from danger. All functions of the ZMC 3.0 are controlled with a convenient desk placed in the cabin.

Application in Pronar's machinery of high-tech solutions, gives the company opportunity to extend their offer to municipalities and private companies which perform cleaning work, road-building and transportation, which, in its activities are required to maintain the cleanliness of the surrounding objects, storage and parking lots.

Łukasz Śliwski
Foreign Trade Specialist, Pronar

Sweepers: Agata ZM 1600 and Agata ZM 2000

CHECKED IN PRACTICE

Pronar's Agata ZM 1600 and Agata ZM 2000 sweepers are universal machines, proven in cleaning the roads and walkways, parking lots, and other paved surfaces, as well as during the work on construction sites.



Agata ZM 1400 Sweeper with the Kioti 4510 tractor

Easy Sweeper design consists of a frame and hydraulically driven cylindrical brush. Sweepers are usually equipped with waste baskets, that (by lifting the machine up) you can easily unload (for example onto a trailer). Emptying is done

with a help of a hydraulic cylinder by use of hydraulic media (e.g. tractor). After the dismantling of the container and change the working direction (you can do this by using a single lever), the machine can be sweeping away.

The big advantage of the two machines is their modular design. Sweepers in a simple way can be equipped with an additional plait side brush to sweep away deposits of pollutants from along the curbs. A very useful feature is



At every stage of manufacturing the Company ensures, the highest quality of the final product is its priority

the ability to mount the sprinkler system with the water tank. This significantly reduces the formation of dust during work in urban areas and improves the quality of services: the moist material is easier to collect.

In Agata sweepers, as the standard tie down, the commonly used three-point suspension system is used. It gives you the ability to aggregate on the front or back of the agricultural and municipal trailers. Sweepers can be optionally equipped with special adapters (anchorage) to cooperate with other vehicles, e.g. with head loaders with fastening system euro or euro-sms type, construction machines (JCB,

CAT), telescopic loaders (Manitou).

Supporting wheels are made of aluminum alloy and have hard tires resistant to damage during the machine work on uneven land. They were also protected against unforeseen falling out in case of lost of blocking bolt or during height adjustment.

Both brushes (main and side one) are made out of abrasion resistant materials. A client can choose from few degrees of hardness- from soft through medium up to hard with metal wires of different diameter. The choice depends upon the type of the pavement on which it will progress its work.

Paying attention so that the manufacturing and materials used in the process of manufacturing are of the highest quality guarantees long-lasting and safe use of the sweepers. Pronar Company goes out of its way that all the machines fulfill the customers' expectations. Years of experience in designing and manufacturing of agricultural and municipal machinery led to making reliable products that provide the users of the machines a lot of satisfaction, and high comfort of work.

Łukasz Śliwski
Foreign Trade Specialist, Pronar

Multifunctional Extension Arms

SELECTION OF THE HEADS, ESSENTIAL

In an efficient maintenance work within the roadway (especially on large areas) properly chosen machinery that will work well with vehicle already owned (such as a truck or tractor) is very helpful. Manufactured by Pronar multifunctional extension arms together with the relevant heads may come handy in such situation.

Pronar's offer includes extension arms mounted on the front of the media (PRONAR WWP500, PRONAR WWP500U and PRONAR WWP600), as well as mounted on his back (PRONAR WWT-420 and PRONAR WWT-480). The media can be a tractor (front or back installation),

but also a multipurpose vehicle Unimog (article on the page 52.)

Articulated construction of the extension arm and its long range allows for the execution of the treatments in hard-to-reach places. After you aggregate your extension arm with the appropria-

te head, you are ready to approach the activities related to maintaining clean road infrastructure (signs, road plates, bars), water and sewer, as well as to clearing ditches and trimming shrubs and branches of trees along roads and in orchards.



PRONAR WWT420 extension arm with a cutting head PRONAR GK110



PRONAR WWP500U extension arm with a cutting head PRONAR GK110 mounted on Unimog

The arms work on the right hand side of the vehicle. However, if necessary, it is possible to work on its left hand side after manually switching the device by the operator. Side Conversion, on which it is supposed to be working, takes a few minutes and it is possible when you work in the field. The arm is mounted on a special rail, which allows its move along to the right or to the left.

The operator can supervise the process from the cab in a very simple and intuitive way with the use of the joystick, located on the control panel inside the cabin. Machine's Drive is transmitted from the front (WWP series) or the rear power take-off shaft of a vehicle (WWT series) over to hydraulic pumps set. Pronar offers a wide range of working heads provides the versatility and the variety of uses of the extension arms.

Łukasz Śliwski
Foreign Trade Specialist, Pronar



PRONAR WWT600 extension arm with a cutting head PRONAR GK110



Multifunctional extension arm PRONAR WWP500 with PRONAR GK140 head mounted on a PRONAR 5340 tractor

Working Heads for Hydraulic Extension Arms

MANY APPLICATIONS OF ONE TOOL

A user of Pronar's multifunctional hydraulic extension arms has a choice of several heads, which can easily be changed and used with a single extension arm. It saves our clients time and money. Thanks to its specialized or mowing heads, you can perform a wide range of work, even in hard-to-reach places, which are often not accessible for machines not equipped with extension arm.

PRONAR manufactures three specialized heads (sawing, to cut branches: PRONAR GP 200, sand washer for ditches: PRONAR IT 800, signs and road boards' washer: PRONAR LGM and three cutting heads: PRONAR GK110, PRONAR GK140, and the latest model PRONAR GK80L).

Sawing head for cutting branches PRONAR GP200 is a four-disk device designed to trim the branches of trees, shrubs and

other vegetation. It is particularly useful in keeping green areas along the roads, paths and crossings (helps to ensure visibility and to facilitate the passage of larger vehicles). Working width of 2 m and a saw with a diameter of 60 cm guaranty an appropriate efficiency and high performance of work undertaken with its help. Thanks to the moving hydraulic drive through grooving belts, the saw is characterized by low noise emission, and the carry drive

system itself does not require support (including lubrication), which dramatically improves the comfort of its use.

On the Pronar Company's offer list there is also sand washing head: PRONAR GO800. This is a tool that allows you to maintain the canals or ditches off with damaged soil, vegetation or mud. Working drive with a width of 80 cm and adjustable discharge direction in combination with a wide range of

adjustment of the extension arm allows efficient access and clearing the waterways that are hardest to access. The design of the GO800 head is simple and resistant, which is another advantage of the tool that is designed to perform rapid and effective drainage work.

Another specialized head offered by Pronar is PRONAR GM500. This is a washer of signs and road boards. Obviously, the GM500 head works very well also for washing other road infrastructure, for example: bars or barriers. The washer consists of two hydraulically driven rotary brushes with a diameter of 40 cm and a length of 50 cm. The supplement of the washing system are two sets of jets that provide water or other detergent onto the cleaned surfaces. This device can take water for example, from a tanker PRONAR R1000.

The washing head PRONAR GM500 is equipped with a protective frame with transparent covers. This improves visibility and increases comfort of the machine operator. If necessary, for instance in case of washing road plates, the frame can be easily disassembled to increase the working surface of the washer.

Manufactured by Pronar working heads-in conjunction with bracket, series WWP and WWT are universal tools designed to work with cars or agricultural tractors. Interchangeable heads can be used with a single extension arm, which increases the number of its possible uses. Regardless of whether we mow roadside slopes, washing road signs or sand washing ditches or furrow, controlled from the operators cab Pronar's heads are easy to use and safe to use.

In addition to trimming branches, sand washing ditches or washing the road infrastructures, hydraulic extension arm are used to cut grass in Especially hard to reach places (scarps, contractions, drainage trenches, places behind the road barriers), if you aggregate them with the mowing head. The Pronar Company manufactures three kinds of this type of tool: GK110, GK140 and GK80L. The principle of the operation of all of the models is the same: the material is being cut and crushed with help of a hydraulic rotary shaft equipped with special knives (flail hammers). The final effect of the head's work is even ground with thoroughly grinded and distributed swath, which is also a layer of high quality fertilizer.

GK series machines differ in working width, that equals 80 cm (GK80L), 110 cm (GK110) and 140 cm (GK140). Attention attracts the latest model on the list and the lig-

htest mowing head PRONAR GK80L. It is light and weighs just 115 kg. It has been designed for cooperation with the WWT series extension arms mounted on the back of the tractor. Thanks to its small mass and even smaller dimensions, it is more compact and it is even easier to mow greenery in hard to reach places with its use.

Rotary Shaft of a mower rotates at a speed of 3000 rpm; combined with a set of 22 Y-type of beater blades guarantees an appropriate efficiency of mowing. The maximum diameter of grinded mowed material is 30 mm. As in the case of larger models (GK110 and GK140), self-aligning head attachment on a floating arm works very well, and allows tracing of the mowed ground. Fixed on the 60 x 60 cm square bar, GK80L head may constitute one of the basic tools used with the Pronar's extension arm.

Łukasz Śliwski
Foreign Trade Specialist, Pronar



A multi-use PRONAR WWP500 extension arm with the PRONAR GP200 saw to cut hard-to-reach tree branches mounted on the PRONAR 5235 tractor

Extension Arm for Work With Unimog

AGREEMENT WITH MERCEDES-BENZ

As a result of the agreement with Mercedes-Benz, on the Pronar Company's offer list WWP500U extension arm appeared. Letter "U" at the end of the series symbol means, the line of municipal machines is designed specifically to be mounted on Unimog and other universal media tools. It is driven by the Unimog's hydraulic system.



PRONAR WWP500U with the branch cutting saw PRONAR GP200 mounted on Unimog 500

Mounting extension arm series WWP on car medium increases the mobility of the set, and hence reduces the travel time to the place of work. After WWP500U booms, Pronar introduced the production of WWP500UH extension arm with its own hydraulic system of arm movements and working head. Extension arms are suspended on the Municipal Board, according to the DIN 76060 type A or B standards. It allows for quick assembly and disassembly of the machine.

WWP500UH hydraulic system is driven by the power take-off shaft media that through transmission increasing the turnover drives a set of hydraulic pumps. Custom oil tank with efficient cooling and filtration systems provide for long

and reliable work. The Oil tank is located between the rail and suspension. It lowers the Centre of gravity of the machine, which has a beneficial consequence on the stability of the system. Intuitive joystick control from the media cab allows for a single-person operation of both the media and the extension arm with a mounted tool. The versatility of the multi-functional extension arms arises from its ability to aggregate with many tools that perform very different kinds of works. That is why after introducing GK110 and GK140 lawn mowers, GO800 sand washer and GP200 sowing head, Pronar offers the washer GM500.

Road signs, just as any other items exposed to traffic conditions, are quickly succumb to dirt. It cau-

ses that lights of the car headlamps do not flicker of the reflective foils, which the signs are covered with. This is a safety hazard on the road. PRONAR GM500 washer is perfectly suited for cleaning soiled road signs and information board along the roads. It has two cylindrical brushes rotating in opposite directions.

Cleaning up of even the most soiled signs is made possible thanks to the sprinkler system. It is connected with quick release coupling to the water container, for example: PRONAR R1000 tanker with a capacity of 1000 l. Shields made out of clear plastic protect against excessive splattering of water during washing as well as guard people against the rotating brushes of the washer. The supporting beams assume the machine support function; they at the same time protect the washer from damage during operation.

WWP500UH extension arm in conjunction with GM500 washer is a great set which allows taking care of road safety and keeping order on the roads. It is also yet another step to make the Pronar Company's offer more complete in terms of machines working with Unimog, and which have been certified by Mercedes Benz.

Łukasz Łapiński
Implementation Department Engineer,
Pronar



TRAILERS

www.pronar.pl



Hook Lift Trailers

THEY LIKE IT IN SCANDINAVIA

Pronar's hook lift Trailer enjoys an excellent reputation in Scandinavia. They are there all the more appreciated that the Scandinavian climate conditions the short growing season and therefore there are universal trailers sought after. They - outside of agriculture - can be used for forestry and construction too. Among the advantages of Pronar's hook lift trailers Scandinavian users point out to stability and maneuverability in difficult terrain. This is possible thanks to the wide tire use.

Pronar manufactures a hook lift trailers: T185, T285, T285/1, and completely new - T286 trailer. The building of PRONAR T185 and T285 trailers is based on the number of frames made of a rectangular profile with high rates of flexural strength, which makes the trailer to well under-

go pressure during transport over rough or slippery ground. Great interest and positive feedback from customers, which the hook trailer T285 has got, led Pronar to expand the offer. It resulted in a trailer: PRONAR T285/1, and PRONAR T286.

Trailer T285/1 is based on the proven design of its prede-

cessor - bottom frame and other components of the loading mechanism, as in the T285, are made of durable closed profiles. The PRONAR T285/1 hook trailer may be equipped with pneumatic, hydraulic or pneumatic-hydraulic (combined) brakes. A significant change resul-

ted from the application of the sprung suspension. It is possible to equip the trailer with the pneumatic brake system with automatic braking force controller (LSVALB). Due to the fact that the automatic controller derives information about the load of the trailer from the degree of deflection of parabolic springs, it may adjust the pressure in the brake system to ALB for each load condition of the trailer. On the other hand, in the brake system with manual control, the operator must, depending on the degree of the load, choose one of the three states of trailer loads (empty, half-full, full).

The hook trailer PRONAR T286 has a completely new design, which was introduced to the market in the recent months. Here are its characteristics:

- The lower frame is made of

durable sideboards, ensuring durability and rigidity of the structure.

- Hydraulically cushioned shaft is made out of high quality steel. It is about 40 percent lighter than similar constructions using spring steel, being equally strong. Its hydraulic system enables smooth adjustment of the tendon height to the tractor's hitch.
- Mechanical suspension tandem parabolic spring suspension with a wheelbase of more than 1800 mm. As a result, the maximum authorized mass of the trailer can be as high as 23 tons. In the optional equipment T286 hook trailer can also be made with air suspension.
- Rear steering axle driven passively (selfsteering). During the drive to the front axle automatically turns to

the direction of travel. However, during reversing, it is necessary to lock her for driving straight ahead. It can also be optionally equipped with actively steered steering axle (hydraulically controlled).

- Two hydraulic tipping cylinders. This solution is used in versions caravan hook. Both cylinders at the same time lift the container, so that seamlessly runs retraction and removal of the container and its unloading. Each of the tipping cylinders is equipped with a brake that in the last phase of the lodging limits the speed of the frames of the trailer.
- Telescopic frame of the hook is sliding with the use of a hydraulic cylinder with a stroke of 1400 mm. Long stroke allows the transport of containers with an internal length of from 5000 to 6500 mm.
- hook with height-adjustable latch. Such a construction enables the transport of containers fitted with drawbar eye at an altitude of 1450 mm or 1570 mm. Hook has also a latch that automatically secures the container's hook eye from uncontrolled slipping.

Pronar's experience in the construction of hook trailers and the application of unique technical solutions makes the PRONAR T286 trailer very popular.

All Pronar's hook trailers may be aggregated with the construction and agricultural containers. Scandinavians appreciate the high quality of the Pronar's hook trailers, giving them very favorable reviews.

Marta Topolewska-Baszun
Foreign Trade Specialist, Pronar





PRONAR 740 Trailer

EFFICIENT GRAIN TRANSPORTATION

Modern farms, specializing in the production of food grain, require appropriate equipment which will guarantee that the grain received from harvesters will be transported in the shortest possible time. Modern harvesters are able to gather in one hour up to 90 tons of the crop. Therefore, it is essential to efficiently transport and unload large quantities of grain.

Instead of flatbed trailers, with a relatively small capacity without efficient and automatic discharge function, for this purpose Pronar reloading cart can be used: T740 with a capacity of 28 m³. Its role is to receive grain during operation of the combine and overloading the transporting trailer or directly into the elevators.

Due to the high capacity, T740 can accommodate even a few harvesters' grain tanks or work in parallel to handle several harve-

sters. For unloading grain from the reloading cart screw conveyors team is responsible. Two of them are in the troughs extending along the entire floor of the load-carrying body delivering grain to deep chambers, located in front of the tank. From the chamber grain is received by the third conveyor, called the scraper, directly to the tilted conveyor, located in front of the front wall of the loading hopper. The team of conveyors enables unloading with efficiency of 200-300 tones per hour

(depending on the type of the unloaded material). With such a high performance conveyors unloading time of the trailer chest is from 3 to 6 minutes.

As optional equipment there may be electronic weighing system mounted in the trailer, allowing for precise determination of the weight of the load. Data about it is collected by the six dial extensometric weight mounted between the cargo tank and the lower frame of the trailer.

The information from the sensors are transmitted to the adder, and then onto the display. Trailer filling level control enables: viewing window, ladder and comprehensive platform.

PRONAR T740 loading cart was positioned on a tandem type suspension, parabolic spring suspension and wheelbase of 1810 mm. The used tires 700/50-26, 5 provide excellent stability during field work and in traffic. The rear steering axle eases maneuverability and reduces tire wear.

After the work is done the trailer should be thoroughly cleaned of all of the remains of the transported materials. This operation is facilitated by a number of improvements. In The floor troughs there are four inspection openings allowing removal of the deposits by the screw conveyors. The whole load of grain, transported by a hopper scraper chamber can be quickly emptied through a hydraulically

controlled gate valve extensive revision. In contrast, tilted conveyor's tube has, at its base, large controlling opening.

The PRONAR T740 trailer comes with standard equipment: a two-wire brake system with manual regulator and crank manual brake. A two-wire installation with

automatic control is available as optional equipment. The aggregation with the tractor is made easier by the adjustable height of drawbar mounting hitch in the range of 450-600 mm and a support stand of the duo-speed transmission.

Maciej Jabłokow
Foreign Trade Specialist, Pronar





Pronar's Hercules N262 and Hercules N262/1 spreaders

EVEN SCATTERING

Pronar's spreaders allow the spreading of manure, peat, compost, lime and even sewage sludge with a capacity of up to 4 m³ per minute. To achieve evenness of the field coating with predetermined dose of fertilizer per unit of area special scattering adapters consisting of bands that scatter evenly and precisely to the width of from 2.4 to 25 meters can be used.

Spreaders are typically equipped with a single-pneumatic brake system, but on request can be equipped with two-wire system, two-wire system with ALB or with a hydraulic brake system. Therefore Pronar's spreaders can work with most tractors.

Hercules N262 spreader with a capacity of 12 tons is equipped with an adapter AH20 with two wide spreading plates. It has a loading platform with a capacity of 11.3 m³ with reinforced structure conveyor. Spreader's moving parts are covered by tilted rigid shields.

Spreader's Chassis is a set of wheel tandem with spring suspension and wheels in size 550/60-22,5, which are suitable for work in harsh environment. Wheels' Profile of low pressure ensures slight soil penetration and packing.

AH20 spreading adapter has two grinding drums, with strong segment-screw profiles and two scattering plates with adjustable settings blades. The adapter is adopted to drive from (PTO) the power-take-off of 1000 rev/min and it has a good grinding and a very broad scatter.

Key features of the Hercules N262 spreader:

- precision dosing;
 - big surface of hydraulic support, so you can detach the spreader on the field;
 - one pair of hydraulic connectors, thanks to which the spreader can work with tractors with a small number of hydraulic outputs;
 - fenders with a big angle for easy slipping off of bits and pieces of manure;
 - convenient access to the deck.
- Hercules N262/1 spreader with 14

tons of payload is equipped with an adapter AH20 with two widely spreading plates. His load-carrying body has a capacity of 14 m³, in which a reinforced conveyor with four floor chains of the 14 mm thick cell is mounted. The speed of the conveyor is controlled by a hydraulic drive. From power transmission mechanism overloading protects the friction clutch and the one-way clutch.

Manure spreader's moving parts are covered with rigid hydraulically hinged cover. Setting an appropriate dose of the spreading substance is achieved by means of the flow regulator, located in the distributor. The spreading adapter AH20 of spreader consists of two grinding drums with strong segment-screw profiles and two scattering plates with adjustable blades. The ability to adjust the angle of the blades depending on the type of a substance being scattered ensures optimal broadness. Spreader's Chassis is a set of wheel tandem spring suspension and wheels in size 550/60-22,5, which are suitable for use in harsh environments.

Optional equipment for spreaders: Hercules N262 and Hercules N262/1:

- axles allow you to move the spreader at speeds up to 40 km/h;
- The brake system - two-wire, two-wire with ALB, hydraulic;
- rigid drawbar to connect with the upper transport hitch of the trailer;
- drawbar hitch: rotary with eye 45 mm in diameter, rigid with eye 40 mm in diameter, rigid sphere K80 mm;
- height indicator of the rear wall raise;
- articulate - telescopic shaft basic or wide;



- tires 600/55-22,5 (N262/1 spreader only);
- spare wheels.

Pronar manufactures also other spreaders: N161 (single axle

trailer with a capacity of 6 tons) and N162/2 (tandem suspension and with a capacity of 10 tons).

Andrzej Czerniakiewicz
Foreign Trade Specialist, Pronar

Forestry Trailer PRONAR T644/1

IT WORKS FINE IN THE TOUGHEST CONDITIONS

Forestry trailer PRONAR T644/1 is the modernized - based on feedback we have received from their users – version of the earlier produced T644 trailer. It went through two-year practical test in one of the forest service establishments with excellent results.



Pronar's designers raised the endurance of the components, and thus the durability, reliability and functionality of the trailer. The biggest structural changes were

done to the support frame of the trailer, loader as well as the attachment and stabilization systems of the loader. Changes noticeably improved machine's stability and durability of structural nodes.



” Fernando Metelli, farmer, and the farm machinery salesman from the village of Camera in the Piedmont region (Italy):

- In February, I bought PRONAR T644/1 trailer appropriate for work in a forest. I am pleased with its performance, functionality and price. I rate it higher than the products of Italian manufacturers of the same kind of trailers. Surely, I will soon buy other models of Pronar's trailers.

In the new stabilizer system telescopic, strong loader support stands with mounted inside hydraulic cylinders were used. The support feet have enlarged surfaces, do not go beyond the outline of the trailers, they are stronger, more firm, and provide more reliable support to the machine during loading tree. Stabilization system's modernization has improved safety and functionality of the trailer.

PRONAR T644/1 trailer were designed in such a way that it can transport the log lengths of up to 6m. It is normally equipped with a hydraulic pull-out frame, which increases the loading capacity from 8.5 to 10.5 m³. Hydraulic steering of drawbar, 'broken' shaft allows for easier maneuvering amongst the dense trees, significantly reducing the turning radius of the whole set. Controlling the loader is done by joysticks use (mounted in the trailer's cab), which are connected to the manifold by means of Bowden strings.

Forestry trailer T644/1 is ideal for working even in the toughest forest conditions. Satisfaction and valuable comments of customer suggests that it meets their requirements.

Łukasz Śliwski
Foreign Trade Specialist. Pronar

Low Loading Trailers: PRONAR RC2100 and PRONAR PB3100

THEY SOLVE TRANSPORTATION PROBLEMS

Anyone who carries out the transport of heavy machinery knows that it raises many difficulties. The problems relate to construction companies, roads repair contractors and the owners of non-standard dimensional machinery.

An effective way to solve this problem is Pronar's low-loading trailers: RC2100 and PB3100. They can be used to carry the machine at all distances (local - attaching the trailer to the tractor and at greater distances - aggregating them with the truck).

PB3100 trailer has been designed for transporting heavy equipment by trucks in mind. The permissible transport speed is 100 km/h. The technical capacity of the trailer, amounts to 21,000 kg, it allows even the heaviest load of construction machinery, for example road roller. Using such trailers solves also problems with long and wide loads. The length of the trailer is 6.5 m and the width - 2.54 m. This gives a total loading surface

of 16.5 m², which can be increased to 19.5 m². The trailer's cargo platform and tracks are made of steel and wooden elements. One person can handle PB3100 trailer, because it has hydraulically lowered raid. Generous standard equipment and a large selection of optional accessories increase its functionality.

Trailer RC2100 is designed especially to aggregate agricultural tractors. It can be towed at a speed of 40 km/h. It has been designed with the group of farmers-entrepreneurs in mind, who already have access to rich fleet of machinery, but also offering services in the field of agriculture. The weight of transported cargo can reach 14700 kg. Just like in the PB3100 trailer, you can adjust the loading surface through

widening. By default, loading surface (flat and loading platform) is 17.9 m². In case of widening it increases to 21.3 m². Further advantages of the RC2100 trailer is a stable ride over rough landscape, maneuverability, ease of use and low maintenance requirements. As in the PB3100 trailer, we can choose the material for the platform's floor.

Due to the high demand Pronar decided to create new versions of this model: RC2100-1 and RC2100-2. RC2100-1 model is a heavier trailer, with a higher loading area. RC2100-2, although it has lower weight it maintained the base model's size of the loading area.

Radosław Puciaty
Foreign Trade Specialist, Pronar



PRONAR RC2100 Trailer



Construction Trailers: PRONAR T679/2 and PRONAR T701

FOR THE MOST DIFFICULT WORK

Transportation in municipal, construction, mining, heavy industry, the construction of highways and other roads, particularly transport of such materials as: rubble, stones, gravel, and sand can be successfully executed with the use of this two trailers

For the most difficult work related to transport there are: PRONAR T679/2 with a capacity of about 12 tons and PRONAR T701 with a capacity of about 15 tons, trailers designed. Their main advantage is the trailer's open load carrying body designed in the shape of a bathtub. Its floor plate thickness is of 10 mm and a wall thickness of 8 mm thick. Its dimensions and a hydraulic opening

- in the form of platforms – of the rear hatch allows for easy loading and transport of construction machinery. Tailgate is equipped in hydraulic locks what guarantees securing the load from slipping.

On request, the trailer's load-carrying body may be made out of hard abrasive materials (Hardox steel) and equipped with additional extension with a height of 800 mm.

In addition to a strong pickup, including chassis and hydraulic tipping cylinders are designed to work in harsh conditions. Dump trailer PRONAR T679/2 and PRONAR T701 are checked on all kinds of roads, even in the uneven/rough fields, mountainous. By mounting the spring suspension tandem type (with two single axles), maneuvering became easy even on an unstable surface.

Large permissible laden mass of the trailers is as follows: T679/2 - 16350 kg, T701 - 24000 kg. It was achieved through the use in their design a very strong chassis - tires, wheels, springs and axles. Robust chassis are made of rectangular hollow sections, increasing the stability of the trailer.

Strong shafts, designed for high loads, make so that the trailers can withstand even the most severe conditions in which they are used. Shafts can be combined with the upper or lower transport hitches of the tractor, and also includes various kinds of top different types of coupling loop and coupling balls. Drawbar in the trailer PRONART701 is amortized with longitudinal steel spring element, which ensures high safety.

These Pronar's trailers are also equipped with hydraulic systems of tipping with telescopic cylinders suspension, hydraulic prop shaft, pneumatic or hydraulic systems, brake and wheel chocks with pockets, rear wheel fenders, ladders and steps onboard, facilitating access to the open load-carrying body, the rear seats (electrical, hydraulic and pneumatic), support service of the open load-carrying body and security grilles at the rear beam lamps.

Łukasz Wąs
Foreign Trade Specialist Pronar



Additional superstructure increases the capacity of the trailer



PRONAR T679/2 trailer



” Kasper Hanneborg, a farmer from Bjørkelangen in the municipality of Aurskog-Høland (Norway):

- T679 / 2 trailers are very good products, made with highest quality materials. Robust design allows me to use it in various conditions without any fear of damage.

Power Push Trailers

CONVENIENT UNLOADING

In an era of declining number of farms, and at the same time of pastural areas of existing holdings, the need to use modern equipment with high performance has been created. The perfect solution to such transportation of agricultural produce needs are bulky power push type of trailers PRONAR brand.

When purchasing the trailer we are faced with various dilemmas: What her type would be the most suitable? What kind of container you should choose? What should be its carrying capacity and storage capacity, and what suspension? Will the owned already tractor work well with it?

In countries where large farm holdings predominate trend is to buy larger, more efficient and functional machines. They allow for a significant reduction in working hours in the field, and thereby reducing its costs. This also applies to trailers that should ensure the efficient transport.

Pronar, which is a leading manufacturer of trailers in Europe,

in its rich offer also has a trailer with a power push sliding wall: PRONAR T902 based on tandem suspension with load capacity of almost 31 m³ and PRONAR T900 on Tridem suspension and load capacity of more than 36 m³.

Power-push trailers are different from the traditional ones in a way of unloading. In traditional trailer unloading is done through lifting the bin to its side or up, in the power push trailer - horizontal cylinders push the front wall of the bin and the load toward the rear of the trailer in order to lift it at the last phase at an angle of 55° and completely empty the bin.

The use of strong pressure cylinders with a total thrust in excess of 30 tonnes allows unloading of all types of goods (e.g. gravel, grain, grass, snow) in less than two minutes. This way of front wall performance allows for compressing the load (e.g. grass), increasing load capacity of the trailers up to 70 percent. The use of elastomeric seals ensures adequate sealing even during the transport of fine-grained loads.

Standard equipment on both models uses actively steered axles (T902 - steering rear axle, while the T900 model - steering axles front and rear, middle one stiff),





in which the turn is being done through strands linked to a trailer's torsion system.

The buyer can choose the type of suspension: a standard mechanical or hydraulically controlled and stabilized, allowing for work in difficult landscape (while driving over irregularities of surface the bin does not tilt, it is stable).

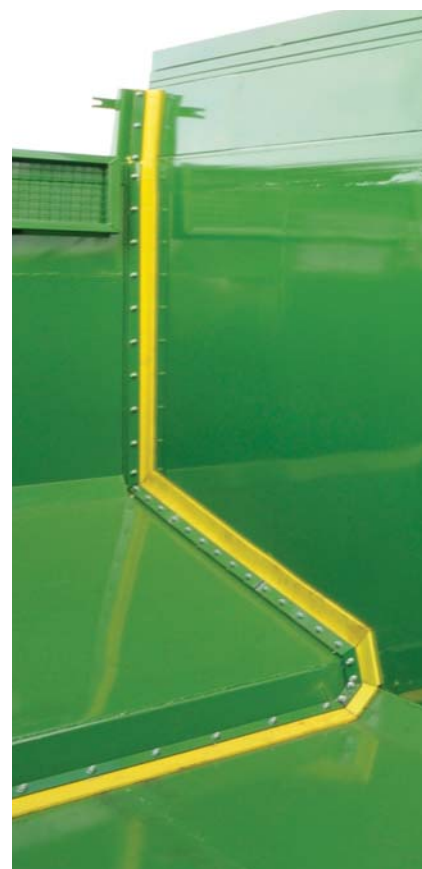
Another advantage of the power push trailers on tridem hydraulic suspension is a possibility of lifting the front axle while driving unladen. Then it moves like a tandem. This helps to reduce rolling resistance and consequently - lower fuel consumption. It increases the lifetime of tires and greater maneuverability is achieved.

Trailers' functionality can be enhanced by additional equipment to facilitate daily work. for example, hydraulically opera-

ted side walls (they allow trailer loading by using a media with a smaller outreach, or hydraulically folding drawbar support and bin superstructure with highth of up to 50 cm (increase the volume of cargo trailer T900 up to 47 m³). it allows you to reduce the number of journeys from and to the field, thus reducing fuel consumption.

Unquestionable advantage of the power push trailers is the possibility of unloading in adverse conditions too, e.g. in cold warehouses, in large uneven ground or in strong winds. This eliminates completely the risks associated with tilted load-carrying body that may occur when using traditional trailers.

Wojciech Parfieniuk
Foreign Trade Specialist, Pronar





The PRONAR T680 Trailer

IT IS AN EXCELLENT CHOICE

Pronar's T680 is the top-selling two-axle trailer. What makes the trailer to be so interesting, and why its subsequent versions are gaining new, satisfied users? First of all, solid workmanship and quality of materials that cause the permissible maximum weight of the trailer to be even up to 18 tones.

Continuous modernization of the T680 trailer – Pronar's response to customers' needs and suggestions. - makes so that it is equipped with a number of elements that

increase functionality. Basic technical parameters of the T680 trailer with the standard height: 800+600 mm

- curb weight - 4900 kg;

- the load area - 12,3 m²;
- Dimensions - length / width / height of 7300/2550/2800 mm.

The standard version can be enhanced with additional equi-



Johannes Kumbolder, a farmer from Reisenberg (the province of Lower Austria)

- Purchase of trailers PRONAR T680 is a very good choice. Particularly worth noticing are: the moderate prices, generous standard equipment, central locking system of walls at the edge of the floor, ergonomic locks on the upper walls, and superstructure with sliding window in the back wall.

ment: extensions with a height of 800 mm, middle bar (reinforcing the strength of the side walls) and third extension to a height of 600 mm. In the upgraded T680 models trailers in mounted extensions in the front, window with dimensions of 340x710 mm with grille and glass Plexiglas was mounted. This element improves the control of the load without leaving the cab.

The New elements streamlining unloading of the trailers, in addition to the rear chute over the entire width of the rear wall, there are extra lateral chutes (deposited at the opening of the wall).

Many of the farmers drive tractors on public roads, which can easily exceed 40 km/h. Therefore, Pronar T680 equipped trailer axles and brakes allowing it to move at a speed of 60 km/h. Their strength has confirmed the German Technical Equipment Überwachungs-Verein (TÜV). In order to check the axle and trailer brakes PRONAR T 680 has passed a whole series of studies, giving assurance of safe driving.

Karol Tatarzyński
Foreign Trade Specialist, Pronar





Monocoque Trailers

ROBUST AND VERSATILE

Anyone who considers the purchase of a monocoque trailer should carefully look at the Pronar's offer. The person will quickly be convinced that he/she will easily find what he/she needs. The wide range of products will help in making the right decision. The proven designs ensure satisfaction and safe exploitation for many years.

Pronar's monocoque trailer's load is from 12 to more than 23 tons and loading capacity - from 10 to more than 36 m³. They can be used in the transport of bulk materials, grain, corn silage and tatter, as well as root crops. This is due to smooth interior box. It mineralizes the risk of damage during the trailer's use.

Pronar produces eight models of the monocoque trailers. We find among them structures with tandem and tridem suspension type. The Purchaser can choose between

tipping one-, two- and tripartite. Convenient handling and increased functionality can be enhanced through rich optional equipment, which includes e.g. sprung drawbar or axle's raiser.

The smallest monocoque trailer offered by Pronaru is the T679 model with a payload of 12 tons. With extension (optional equipment) its cargo capacity is 15.8 m³ (without extensions - 10.3 m³). T679, like other models of Pronar's monocoque trailers (T669, T700, T700M),

moves on tandem suspension. This solution is increasing maneuverability. This is due to cornering load transport hitch. The bigger it is, the more loaded rear wheels of the tractor are, which increases the towing power.

Over 14 tons of load capacity a monocoque trailer PRONAR T669 provides. An important advantage is its trapezoidal shape of a box, which accelerates and streamlines the unloading. This solution we can also find in many

other Pronar's monocoque trailers. PRONAR T669 Capacity with an extension reaches almost 23 m³. This gives the user immense opportunities in terms of transport capacity.

T669/1 model is yet another monocoque trailer manufactured by Pronar. Its characteristic feature is the ability to use one of three types of tipping. We can only choose between tipping backwards, backwards and to the right or to the left, as well as to the left, and back right and left. This allows the discharge of the trailer possible in any way and anywhere. This reduces the need for maneuvering, which makes the work of the trailer easier and more efficient. Thanks to that the owner saves fuel and time.

Until recently, among the Pronar's trailers on the tandem suspension, the largest payload was exhibited by the T700. Now T700M



has a higher one, but the parameters of the T700 are still impressive. It is equipped with extensions with an 830 mm height allows you to fit up to 34.3 m³ of load. Thus, the user

can reduce the number of journeys from place of harvesting to the place of unloading. This equals obvious savings. An important feature of the T700 is an amortized with sus-

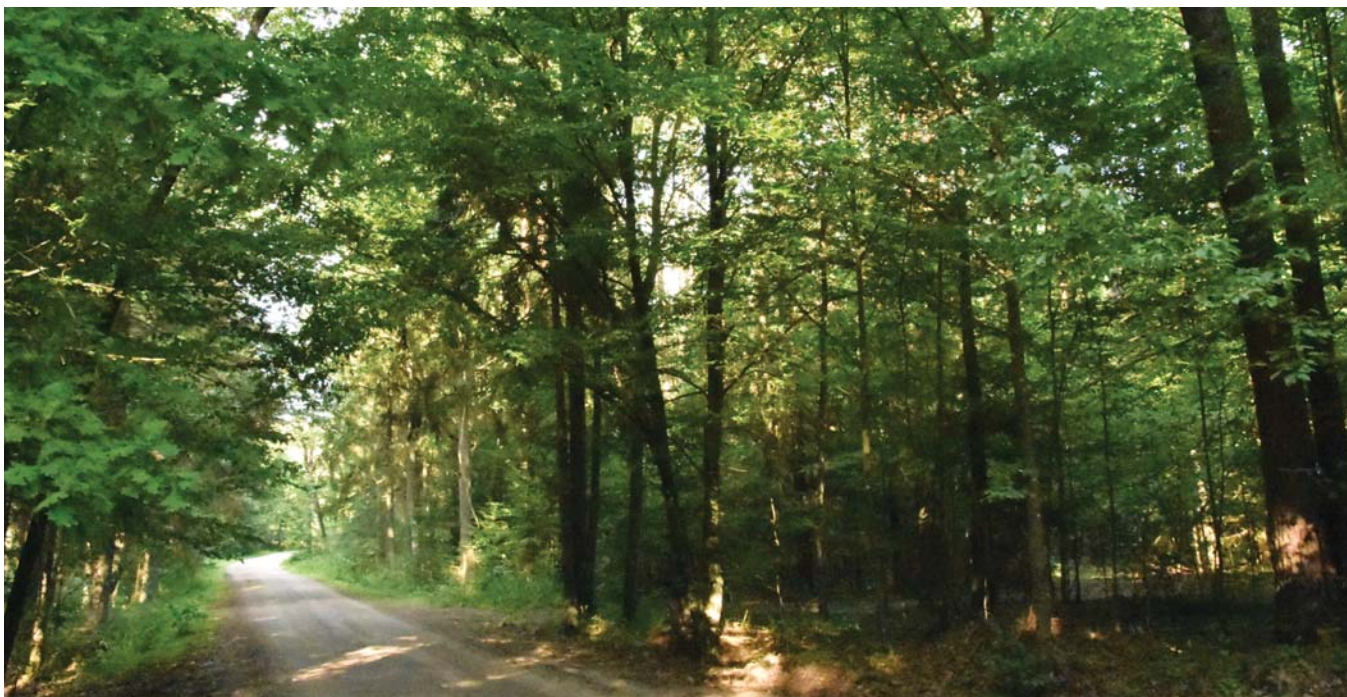
pension drawbar. This design significantly reduces vibration and forces transmitted from the tractor to the trailer and from the trailer to the tractor. It improves working comfort and trailer's reliability.

PRONAR T700M Trailer is the result of T700 model modernization. However, due to significant differences in the technical parameters we can speak of a new type of trailer. It employs a very strong 24-ton tandem suspension with parabolic springs, cross-section axles of 150 mm and drum brakes adapted to the speed of 60 km/h. Thanks to such unique parameters of chassis, trailer T700M is ideal for difficult terrain (e.g. Soft unpaved ground) and for transport over long distances. It has also differently shaped side wall from the T700. They are entirely made of one steel sheet. Profiling that sheet in a modern way means that the structure is more rigid, and the center of gravity of container is lower than in case of the T700 trailer or in other known versions of the half-pipe monocoque trailers of other manufacturers. This means an increased strength and stability of the trailer.

In the Pronar's offer there is also T682/1 trailer on the tried suspension. It is characterized by a rugged suspension, solid construction, effective brakes, a large cargo capacity and ergonomics of use. They provide her such features as: Drawbar suspension or steering axles, making the work not difficult at all. Due to the high capacity (21 tons) PRONAR T682/1 is widely used on farms and service enterprises.

Helena Landowska
Marketing Specialist Pronar





Tourism

FOREST, EUROPEAN BISONS AND UNIQUE HOSPITALITY

Pronar Company's headquarters and all of the factories are located in Podlasie-one of the most beautiful Polish regions (north-eastern part of the country), renowned for its untouched nature. The main tourist attraction of Podlasie is Bialowieza Forest-the only prehistoric lowland forest in Europe.

Within the forest Bialowieza National Park was created with numerous nature monuments, reserves, protected areas and hiking trails leading to the most remote corners of the forest through the educational tracks, the narrow-gauge railway and through villages. The variety, beauty and unique character of nature are our real national treasure.

The conservation of nature in such unaltered form is a rarity in Europe. Bialowieza Forest was favorite place to relax (among others: Stefan Batory, Sigismund Augustus and Wladyslaw II Jagiello.) Even to-

day it is tempting everyone who wants to take a deep breath and escape from everyday life. The multicultural society (the border with Belarusian), the stunning wooden architecture, and hospitable people - it's all here!

Bialowieza and the surrounding villages have an extensive accommodation base. The tourists have a choice of private rooms, motels and hotels of European standard to choose from. Bialowieski Conference Hotel, Wellness SPA stands out from amongst them. It is situated in the heart of Bialowieza Forest. Quiet location, unique

microclimate, the direct vicinity of protected areas under the 'Natura 2000' program, and proximity of historical remnants left by Tsar Alexander III makes. It is a great place to stay. Hotel SPA is the largest complex of saunas and beauty treatment in Bialowieza, and one of the largest swimming pools in north-eastern Poland. In the hotel, there is also a soundproofed complex of conference rooms for 400 guests, enabling flexible arrangement of space.

Bialowieza Forest welcomes everyone with peace and offers tranquility, a highly sought after experience in today's fast paced



world- says Marek Czarny, owner of the Białowieża Hotel. According to him, the priceless value is exhibited by staggering cultural diversity of the region. All this is combined in the kitchen, because the podla-

ska kitchen is a wonderful fusion of Polish, Tatar and Belarusian one. The hotel's kitchen serves also smoked on-site variety of meat and fish.







Among the hotel guests, apart from the Polish ones, there

are many foreign tourists too - mainly from Russia, England, Holland, Germany and Spain.

Białowieżski Hotel cooperates also with The Pronar Company. This cooperation has been going on for over twelve years - says Marek Czarny - When we first met with Sergiusz Martyniuk, the Prime owner of the Pronar Company, I had some business problems with the hotel. Mr. Martyniuk, who had his own enormous company to run, devoted his time to provide me with guidance. I received from him precious guidelines, which turned out to be very helpful. I perceived this as an example of noble fair play behavior and selflessness. I appreciated his support enormously.



Helena Landowska
Marketing Specialist, Pronar

Establishment of company & creation of PRONAR brand.	1988	
Export and import of agri-food products and mineral fertilizers.	1989	
Beginning of trade with Belarus tractors.	1990	
	1991	
Start of production of Simple tractors based on imported components.	1992	
	1993	Dynamic development of trade of MTZ and self-developed tractors.
Creation of a dealer and service network in Poland.	1994	
	1995	Modernisation and adaptation of plant in Narew to new lines of production.
	1997	Launch of autonomous Disc Wheel Department.
	1998	Launch of Pneumatics & Hydraulic Department expansion of trade into import and wholesale of metallurgical materials.
	1999	Expansion to Export markets.
	2000	Active development of technical and engineering facilities, high employment growth, the start of serial production of PRONAR municipal.
Launch of Plastic Production Department, introduction of ISO 9001:2000 .	2001	
	2003	Start of production and sales of agricultural trailers.
Start of cooperation with Korean Daedong Ltd – distribution of Kioti brand of tractors in Poland.	2005	
Start of production and sales of high-tech tractors P5 and P7 series , a complete line for hay and straw and machines for feeding. Upgrade of factory in Narew – assembly lines for trailers, disc wheels and tractors.	2006	
Implementation of the Integrated Information System SAP .	2007	
	2008	Start of production of high-power tractors P6 and P9 , launching of plant for hay and straw machinery in Strabla.
	2009	Start of production and sales of machines and trailers for aggregation with trucks.
Launch of factory in Narewka intensive growth of production and sales of bulk trailers.	2010	
Start of production and sales of steel profiles, strong employment growth and the expansion of sales on six continents, start of construction of factory in Hajnowka.	2011	
Start of production and sales of axles, machinery for sorting and processing of municipal waste and mowing bars constructed by Pronar engineers.	2012	
Commencement of construction of Research and Development Center (RDC) in Narew and commissioning of new warehouse of Disc Wheels Dept.	2013	
Expansion and modernization of factory in Siemiatycze, Service Department in Narew and the modernization of production and technological facilities of R&D Dept., Disc Wheel Dept. and Pneumatic & Hydraulics Dept.	2014	





Plant No. 1 Narew



Plant No. 2 Narew



Plant No. 3 Narew



Narewka



Strabla



Siemiatycze



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