

MENEGOTTI TECHNICAL MANUAL

PROFESSIONAL LIGHTING TOWER

RENTAL MAX LIGHTING TOWER

40860754 - Professional Lighting Tower W/Generator MGR-D 6500 Diesel
220V Mono 2P 60HZ W/LED 400W

40860755 - Rental Max Lighting Tower W/Generator MGR-D 6500 Diesel
220V Mono 2P 60HZ W/LED 600W

QR-Code:



Point your mobile phone camera to access the updated online version of **Technical Manuals** and **Parts Catalogs**, or click on the link below to access the website.

www.sites.google.com/view/menegotti-engenharia-docs

Attention:

Before operate **Menegotti equipment**, read this **technical manual**, itself will inform and instruct the operator about the operation.

By the way, you avoid possible working accidents and early maintenance on at the equipment.



PROFESSIONAL



RENTAL MAX

MENEGOTTI[®]
CONSTRUCTION

Congratulations on purchasing a Menegotti product!

With the highest quality, designed and built especially to serve you with technology to suit your needs.

This manual was written to provide you with the information and instructions necessary for the use and maintenance of our equipment, as well as to present you with data relating to its technical characteristics.

Before you put your equipment into operation for the first time, carefully read the information contained herein.

The durability of your equipment depends only on the way it is treated during service (operation) and its satisfactory performance is the result of your careful work, carried out regularly.

Menegotti is prepared to offer you all the necessary technical assistance, as well as to meet your needs for spare parts.

Welcome, you are now a part of the great Menegotti "client family".

MENEGOTTI After Sales and
Technical Assistance departments.

Caution: For best convenience, keep this manual in a appropriate place where it can be consulted when necessary.

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Menegotti Group

Menegotti is reference in the development of solutions in machines and tools for the Construction machinery, Handling and Lawn | Garden Segments.

A Brazilian company, present in more than 40 countries, has its headquarters in Jaraguá do Sul, Santa Catarina, units in Brazil and in the United States.

With more than 80th years of history, it is in the fourth generation of consistent and successful family management.

National leader in sales of concrete and cement mixers, it stands out in the resale and rental market.

Through its Innovation Program, it fosters creativity and competitiveness, with disruptive actions and partnerships, aimed at continuous professional and business growth.

With an organizational culture that values and encourages its constant professional and personal development, Menegotti is active in sustainable projects, which make its purpose of contribute “to build a better and more sustainable world”, a reality.



The Product

The Professional/Rental Max Lighting Tower is a self-contained power-generating system, trailer-mounted, built from a composition of steel plates and tubes. This equipment is the ideal tool for lighting operations in adverse locations and conditions, such as construction sites, airport, road services, shows, rescues, mining, agriculture, fishing industry, infrastructure works, night, social and sporting events, among others, that need constant or emergency lighting. The system also has an additional power supply to operate power tools up to 1.200 W (drills, sanders, saws, etc.). All this combined with excellent lighting efficiency and low power consumption.

Characteristics:

360° rotating reflectors: They have a 360° rotation system on two axes, which allows lighting in several directions.

360° rotating telescopic mast: It has a retractable system which allows the reflectors to be lifted to a maximum height of 8,0 m from the ground. It also has a 360° swivel system, which allows changing the direction of the reflectors.

Structure: Robust, with adjustable outriggers for stabilization and safety, of wich are: two extendable side, two rear, and one front adjustable outriggers.

Generator set: 5000W single-phase generator powered by an air-cooled single-cylinder diesel engine.

Electrical system: The Professional Lighting Tower has 4x400W LED, while the Rental Max Lighting Tower is equipped with 4x600W LED. Both units have two auxiliary power outlets for the use of tools up to 1.200W.

Towing and transport system: Locomotion within the work site and lifting points for transport in vehicles suitable for this purpose (except on highways).

Fuel system: Fuel tank with a capacity of 120 liters, providing 96 hours of operating autonomy.

Set of wheels and bodywork: Set of 14" rim wheels. The rotating system also has steel plate fenders. Side doors provide full access for maintenance.

Safety Information



- First read the procedures in this Manual carefully. It is strictly forbidden to remove or change any of the equipment's safety devices. If you notice any problems, damaged or missing parts, immediately contact the SAC or the Factory's Technical Assistance Department through the telephone number +55 (47) 3275-8000 for communication and corrective action request.



- Maintain an exclusive area limit for working with the equipment, keeping the place always clean and without obstructions in the way. The operator must be trained or qualified to operate it. It is important to demarcate the place where the equipment operates and block the movement of people in this place by creating a safety area around it. Always use PPE in accordance with the current NR12 standard. Since the maximum noise level during operation can reach up to 75 dBA, we suggest using hearing protection during prolonged operation.



- This is the safety alert symbol. Obey all indicative warnings to avoid risk of serious injury or death.



- Inspect the entire electrical system (cables and connections), especially for cuts, frayed cables, and broken connections. When cleaning the equipment, never pour water on the generator. Whenever you perform maintenance or cleaning, do it with the generator set turned off.



- Grounding point.

Do not modify or use in applications for which it is not designed. Operating the equipment without proper training can be dangerous. Read the machine operating information contained in this manual and understand the operation before operating. Always perform the following procedures before operating the machine:

- Do not remove, scratch or damage equipment safety devices (safety and operating decals, outriggers, electrical components, locks, etc.).
- The equipment positioning and operating area must be dry, clean and free of obstacles.
- Operate the equipment on a firm and level ground. Make sure that the machine is well secured and leveled so that it cannot slide, tilt or fall during operation.
- Retract the mast when the machine is not needed or when there are storms with high winds and lightning strikes.
- The mast can be extended to a maximum height of 8.0 m (26 ft). Make sure that the area in the reach of the mast is clean and free of obstructions (power lines, etc.). Never extend or retract the mast with the lights in operation.
- NEVER move the equipment with the system in operation or with the mast extended.
- Before extending the mast, make sure the adjustable outriggers are extended and level. The adjustable outriggers must remain extended whenever the mast is extended.
- NEVER remove the mast safety screw while the mast is in operation.
- NEVER operate equipment with power cable faults (breaks, rips, exposed wires, damage to insulation, etc.).
- NEVER connect the machine to other power sources, such as a utility grid.
- When it is necessary to replace mechanical or electrical components, make sure they are identical to the original project.
- Keep the area near the tower clear of people while lifting and lowering the mast!
- Do not allow direct exposure of electrical components to water (generator, panel, terminals, etc.). Note: Do not wash this equipment with high pressure devices (e.g., high-pressure cleaner).
- Keep hands and long clothing away from moving parts, such as engine, generator, mast, winches, etc.
- When transporting the equipment, make sure that the lifting mechanisms (hooks, hoists, straps, etc.) are adequate and have the necessary load capacity to lift the equipment.
- This equipment has a connection point for a grounding rod at the rear. We recommend for safety reasons that the user consult the operating engineer to use the correct rod according to the type of ground on which the equipment will be used.



Safety when using internal combustion engines:

Combustion engines can present hazards, especially during operation and filling. Read the following guidelines carefully, as failure to follow them can be harmful to health or even cause death:

- Do not start or operate the engine in enclosed or poorly ventilated areas, unless there is a specific system for exhausting the gases. The gases generated by burning fuel contain carbon monoxide, which if inhaled can cause nausea, fainting or death.
- Do not fill the tank in enclosed areas with poor ventilation, near open flames or with the engine running.

We recommend using S10 Diesel oil.

- Do not touch or touch hot engine surfaces (manifold, block, exhaust ducts, etc.).

- Do not clean the air filter with gasoline or low flash point solvents.
- Make sure that the exhaust ducts are free of obstructions to avoid the risk of accidental fire.
- Batteries contain sulfuric acid, which is harmful to health. If it comes into contact with it, it can cause severe burns (skin, eyes, etc.) or even death.

Turn off the engine immediately:

- In case of change of its rotation or excessive vibration.
- If there is a loss of power or voltage in the system.
- If any electrical component of the machine overheats or sparks occur.
- If the ambient temperature exceeds 45°C.



Safety during transportation (towing):

The towing systems must be in perfect working order, as well as the vehicle used for transport. It is necessary that both are securely coupled so that there is no risk of accidents.

- Make sure that the load capacity of the vehicle is compatible with the GTW (Gross Total Weight) of the coupled system (Tower + vehicle).
- Make sure that the tires are in perfect condition and calibrated.
- Make sure that the hitch and the coupling are in perfect condition, free of wear and damage. Note: The hitch must be compatible with the vehicle coupling and must be perfectly coupled.
- The maximum recommended speed is 20 km/h at the place of operation.
- Do not exceed the speed of 40 km/h and do not make abrupt movements.
- In uneven terrain, do not exceed the speed of 20 km/h.
- Do not drive on public roads.

WARNING: Do not perform abrupt maneuvers with the equipment!



Safety when Performing Maintenance:

As this equipment is built and operates with MEDIUM VOLTAGE electrical systems, it can cause damage to physical integrity or even death. Only qualified and/or trained professionals must perform maintenance work on it.

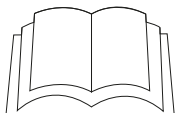
- Before performing any maintenance work on this equipment, make sure that all power conducting components are properly disconnected (starters, circuit breakers and negative battery cable).
- Never replace electrical components without the assistance of a qualified professional (electrician).



Symbols for identification, safety and operation:

This equipment provides numerous instructions and care information for safe operation. All stickers and information plates present are found in this Owner's Manual and will be presented below. If any of these items are damaged in any way that renders them illegible, it is suggested that they be replaced.

Below are summaries of the meanings of the symbols used in the instructions:



Consult the instruction manual.



Point for forklift handling.



Lifting point.



Shock hazard. Medium voltage present.



Risk of crushing. Do not bring closer parts of the body.



Hot surfaces present. Risk of burns.



Supply with Diesel.



Fire hazard. Do not bring flames or hot components.



Warning.



Always wear hearing protectors during the operation of equipment.



Voltage/Frequency of work.



Extender, Apoyar y trabar las zapatas antes de mover el mástil.



Generator operating instructions.



Caution: Danger of asphyxia.
Operate in well ventilated areas.



Electrical unit Ground.



Sound pressure in dB.

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Always wear safety goggles during operations equipment.



Siempre baje el mástil antes de mover la máquina. Riesgo de Vuelco.



**PAY ATTENTION ON THE
MAXIMUM HEIGHT LIMIT
STOP LIFTING UP ONCE
YOU SEE THE RED LINE**



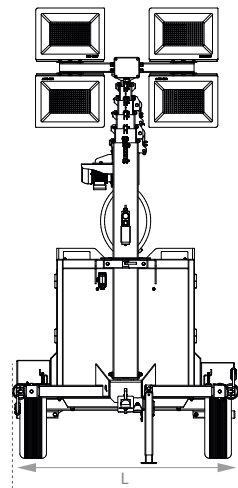
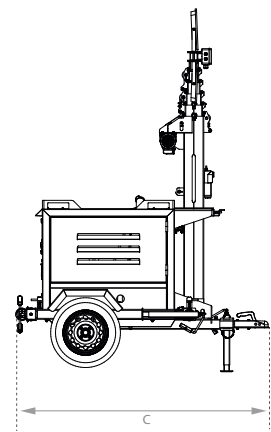
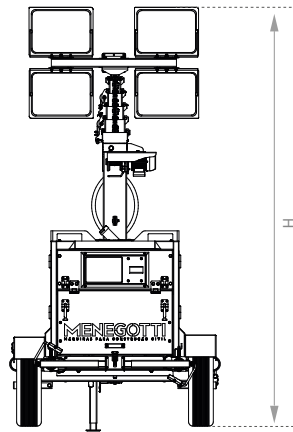
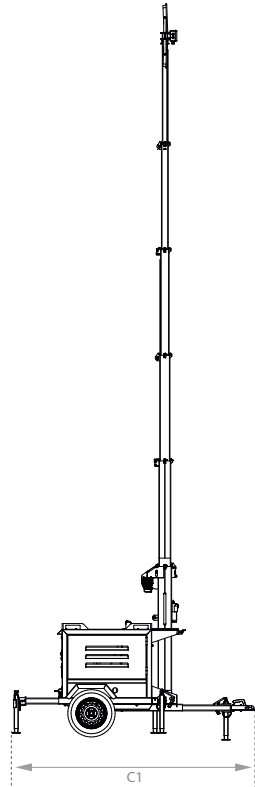
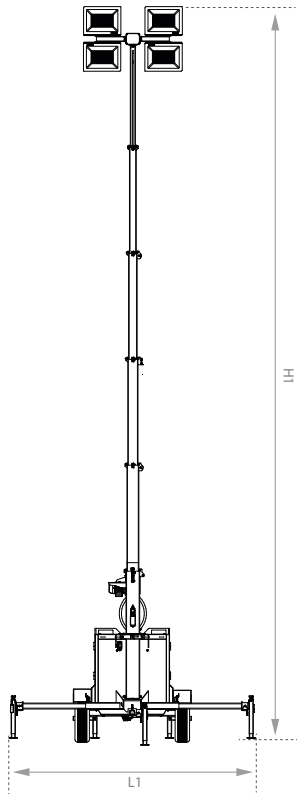
VISIBLE PARA LA
EXTENSIÓN DEL MISMO



Equipment nameplate.

Technical Specifications

LIGHT TOWER	RENTAL MAX MODEL	PROFESSIONAL MODEL
WEIGHT	550 kg	540 kg
MAXIMUM HEIGHT	8,0 m	8,0 m
LIGHT TYPE	LED	LED
LIGHT POWER	4 X 600 W	4 X 400 W
LIGHTING CAPACITY	240.000 Lumens	160.000 Lumens
FUEL TANK CAPACITY	120L	120L
MAST HOISTING SYSTEM	Electric Winch	Manual Winch
SUPPORTING OUTRIGGERS LEVELING SYSTEM	05 Screw-adjustable outriggers	04 adjustable outriggers w/ locking pin without spindle; 01 front with spindle
MOTOR/GENERATOR CHARACTERISTICS	Generator MGR 6500 V2 - Diesel	Generator MGR 6500 V2 - Diesel
MODEL	MGR 6500 V2	MGR 6500 V2
NOMINAL WORKING POWER	5000 W	5000 W
MAXIMUM NOMINAL POWER	5500 W	5500 W
TENSION FREQUENCY	220 V 60 Hz	220 V 60 Hz
ALTERNATOR TYPE	Brushes - Self excitation - Synchronous - 2-pole - Single phase	Brushes - Self excitation - Synchronous - 2-pole - Single phase
INSULATION GRADE	B	B
POWER FACTOR COS Ø	1	1
DISPLACEMENT	418 cc	418 cc
POWER	6,8 cv	6,8 cv
START SYSTEM	Recoil Electric start	Recoil Electric start
BATTERY V/Ah/CCA	12 V / 250	12 V / 250
FUEL	Diesel	Diesel
AUTONOMY	96 h	96 h
NOISE LEVEL	70 dB(A) - 7 meters	70 dB(A) - 7 meters
DIMENSIONS (L x W x H)	750 x 510 x 710 mm	750 x 510 x 710 mm
EMPTY WEIGHT	110 kg	110 kg
TENSION REGULATION	Automatic AVR	Automatic AVR
CRANKCASE OIL VOLUME	1,4 L	1,4 L
ENGINE	4 Stroke - Single cylinder - Air Cooled	4 Stroke - Single cylinder - Air Cooled
WARRANTY PERIOD	6 Months	6 Months



DIMENSIONS	RENTAL MAX	PROFESSIONAL
H	2878	2854
H1	8000	8000
L	1448	1396
L1	2908	2710
C	2037	1928
C1	2877	2778

Equipment Operation

- The tower must be placed at the same level or higher than the area to be illuminated to obtain greater lighting coverage.
- Ensure that the floor is flat and firm and that there is enough space for the outriggers to be extended. Operation with uneven equipment can cause equipment instability, which may cause it to tip over.
- Ensure that there are no electrical grids or other constructions that prevent the mast extension.



CAUTION: Do not operate the equipment in high winds or on lightning days!

Inspections before startup:

- Check engine oil levels: If the level is lower than indicated, follow the engine maintenance instructions in this Owner's Manual to change or top off the level.
- Check the air cleaner: Keeping the air cleaner clean and in a good condition is very important.

Dirty filters can damage and wear out the engine. Always keep the element clean.

- Check the steel cables: if they are bent or have broken twists, they must be replaced with identical ones before starting operation.

To do this, contact technical assistance to guide and assist in the replacement procedure of the damaged items.

- Check the electrical cables: if they are damaged (cuts, damaged protective cover, etc.), they must be replaced before starting operation.

To do this, contact technical assistance to guide and assist in the replacement procedure of the damaged items.

- Check the fuel level: if the fuel level is not sufficient for the desired operation, fuel must be refueled. Always use good quality diesel and never mix or use other fuels (alcohol, gasoline, etc.). If the fuel has run out, it may be necessary to bleed the fuel system, refer to the engine operating manual for this.

For more information on the engine operating manual, contact the SAC or the Factory Technical Assistance Department at +55 (47) 3275-8000.

- Check the tires: If the tires are flat, they must be calibrated (30 psi) to ensure that the equipment is not on a slope.



Instructions for mast extension:

ATTENTION: Check the friction brake system of the manual ratchet winch (professional tower). To check it, just turn the winch handle three full turns in an upward direction, if it stays immobile when you take your hands off the handle, it indicates that it is working normally.

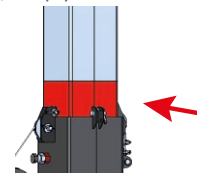
- Extend the two side outriggers and lock them.
- Rest the two side outriggers, the rear outrigger and the wheel jack firmly on the floor.



ATTENTION: If the equipment is not properly leveled before raising the mast, it will compromise its stability and may tip over, resulting in physical injury or even death!



- Adjust the position of the reflectors, if necessary. The reflectors can be rotated 360° in two axes, to do this, simply loosen the fixing screw, position the reflector and retighten the screw.
- Rotate the mast (on its vertical axis) if necessary, to adjust the lighting direction.
- Use the mast winch to extend the mast. Lift to the desired height.



WARNING: Mast limit switch: **NEVER** exceed the red strip indicating the mast stroke limit, risk of falling!

CAUTION: Watch the power cable while lifting or lowering the mast. Make sure that the cable is properly coiled and uncoiled.

Startup instructions:

- The motor must only be started when the equipment is already in place. Do not move the tower with the mast extended or the motor running.
- Check that all lamps activation buttons are turned off.
- Connect the red cable to the positive pole of the battery and the black cable to the negative pole.
- Turn the key to the "On" position.
- Slowly pull the starter handle until you feel the resistance - "compression" point (3).
- Lower the compression lever (4).
- Set the engine speed lever to "Start" (2).
- Turn the key to the "Start" position, remove your hand from the key as soon as the engine starts (1).
- Allow the engine to warm up for a few minutes before applying the load.
- Start the engine. The engine switch (A) has 3 stages:
 - 1st Stage "OFF": Motor stop position and interruption of the electric current. The key must be placed and removed in this position.
 - 2nd Stage "ON": This position allows normal engine operation. In this position, turn on the fuel pump.
 - 3rd Stage "START": Turning the key to this position activates the starter motor, starting the equipment. Immediately after starting, the key automatically returns to the second stage.



Note: Do not activate the starter for more than 5 seconds. It may overheat the starter motor. Return the key to the "OFF" position and wait 20 to 30 seconds before trying to start again.



- Turn on the general AC circuit breaker (D): It enables the circuit breakers that connect the LED reflectors and energizes the two 220V power outlets (I) (The sum of the power of the loads in the sockets must not exceed 1200W). Do not exceed the power limits of the power outlets, because an overload will immediately disconnect the corresponding circuit breaker. Check the current indicated on the power outlets and be sure not to use equipment with a current greater than the specified amperage.

Control Panel



Circuit breakers



POS.	ITEM
A	START SWITCH
B	OIL LEVEL WARNING
C	VOLTMETER/HOUR METER/FREQUENCY
D	SINGLE PHASE AC 1P CIRCUIT BREAKER
E	DC CIRCUIT BREAKER
F	DC POWER OUTLETS
H	CONNECTOR FOR GROUNDING
I	AC POWER OUTLETS
J	CIRCUIT BREAKER LED REFLECTORS
K	WINCH CIRCUIT BREAKER (RENTAL MAX MODEL)
L	UP/DOWN BUTTON (RENTAL MAX MODEL)

End of operation instructions:

- Turn off LED reflectors and electrical equipment connected on the power outlets.
- Retract the mast to the minimum height position.
- Stop the motor. Never stop the engine while there are still lamps or equipment connected to the tower, to avoid damage to the generator.
- Pick up the outriggers.



Equipment Transport

To transport the equipment safely, the following recommendations must be followed:

Transport on another vehicle:

- Retract the mast.
- Lock the mast pivot pin.
- Disconnect the negative battery cable and attach it to the machine.
- Check that the covers and doors are locked.
- Use the lifting points or position to engage the forklift forks to lift the tower and place it on the vehicle.
- Secure the equipment firmly in the vehicle, preventing it from moving during transport.

Transport by towing the tower at the operating site:

- Check that the mast is locked with the pin and clamp.
- Check that the covers and doors are locked.
- Place the jacks in horizontal position (two side jacks and the two rear jacks must be in this position).
- Check the pressure of the tires and their conservation status.
- Fix the towing hitch of the tower with that of the vehicle and install the safety lock.
- Do not exceed 40 km/h or make sudden maneuvers.
- On uneven terrain, do not exceed a speed of 20 km/h.
- Do not drive on public roads.



Equipment Maintenance

Lubrication:

Perform monthly lubrication with lithium grease of the components indicated below:

- Steel mast extension cable;
- Manual ratchet winch (Professional Tower);
- Adjustable outriggers Jacks (2 side, 2 rear and 1 front (Rental Max Tower);
- Front adjustable outrigger Jack (Professional Tower);



Note: In case of maintenance, make sure that the "continuity" of the numbered wires is in accordance with the wiring diagram.

Reflector system maintenance:

If it is necessary to remove the reflector for transportation or replace any LED reflector due to malfunction, you must first turn off: the lights, the main switch and the engine.

If the reflector burns out, it must be replaced with another of the same characteristics and power. Do not replace the reflector with one of higher power. In case of replacement of the reflector, observe the wiring diagram and follow the same sequence shown in the electrical diagram (pages 21 e 22).

Generator maintenance:

Generator maintenance must be performed by trained personnel. Never service the generator while the engine is running. Before starting the generator, turn off the loads and turn them on only when the generator is showing proper voltage values (USE MULTIMETER TO TAKE VOLTAGE, FREQUENCY, ELECTRICAL CURRENT MEASUREMENTS, etc.).

For proper generator operation, the following maintenance schedule is recommended:

- Keep the generator clean, with air ducts free of obstructions.
- Check the brushes periodically, replacing them when excessively worn.
- Clean and sand the rings and fit brushes (400 grit sandpaper).
- Adjust the pressure of the brush holder springs.



ITEM	CHANGE FREQUENCY
Carbon brushes	Change every 2 (two) years on average
Brush holder with spring	Change every 2 (two) years on average
Snail spring	Change every 2 (two) years on average
Replace bearing supports	Every 15,000 h on average

Generator excitation guidelines (manufacturer's guidelines):

- The generator may lose residual memory when subjected to:
 - A violent short circuit.
 - Receiving atmospheric electrical discharges, directly or indirectly.
 - Being unused for a long time.



In such cases, in addition to being repaired, it must be re-magnetized (excited) using 12V battery terminals as shown below:

The magnetization is done by connecting the + and - terminals of brush holders to the terminals of a direct current source, which may be a 12V battery or a reticulated source, with the generator at nominal rotation. When the generator stops, its magnetic field has small particles that store the magnetic orientation received (residual magnetism), and when it starts again, this magnetic memory begins to excite until its complete magnetization, being able to generate power.

Air filter maintenance:

Keeping the air filter clean and in a good condition is very important. Dirty filters can cause engine damage and wear. Keep the element always clean.

- a) Remove the filter element from inside the filter and wash it with kerosene, then dry.
- b) After washing the element, wring it out the oil well.
- c) Put the element back in the filter and fix it securely.



For more information contact Menegotti at +55 (47) 3275-8000.

Engine maintenance:

Engine maintenance must be performed by trained personnel. Never service the engine while it is running. It is important to do a general check before starting the engine.

For further maintenance information, refer to the engine manual.

For proper engine operation, the following maintenance schedule is recommended:

- Check the oil and fuel level daily.

Note: Preferably use S10 diesel oil, as it increases engine performance and has a lower formation of sediment in its components, as well as reducing the emission of polluting substances into the atmosphere.

- Clean the oil filter every 500h.

- Clean the air filter every 100h - in dusty areas, clean daily.

- The fuel filter removes dirt and water from the fuel.

It is necessary to clean the filter element contained in the filter every 500h to avoid dirt accumulation and consequently clogging.

Check the engine oil:

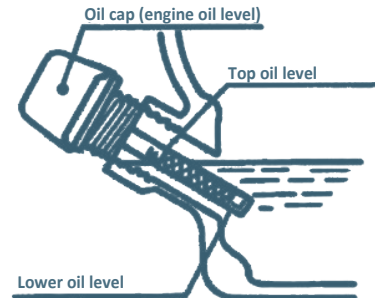
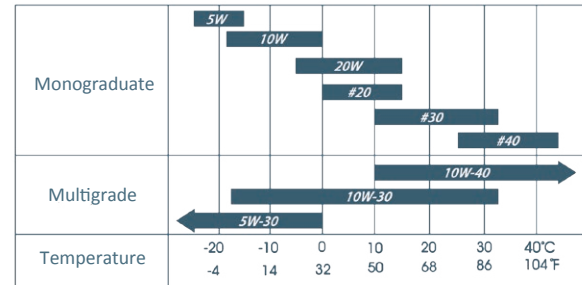
- Make sure the engine is leveled.

- Remove the oil cap and check the oil level.

- If the oil level is below the lower level mark, top up with 10W-30 or 15W-40 diesel engine oil (see the chart above) to the upper level line. Do not screw on the cap while checking the oil level.

- Change oil if it is contaminated (guidance on maintenance topic).

- Engine oil capacities: 1.4 L.



Change engine oil

a) Drain the oil by removing the drain and filter from the oil cap with a 17 mm wrench, while the engine is still warm.



NOTE:

Use a suitable container to place the oil and to protect the environment.

b) Reinstall drain and fill oil until it reaches the maximum level indicated on the oil level gauge.

*Use good quality lubricating oil in the specified quantity. If contaminated, used or poor quality oil is used, the engine will be damaged or will lose its useful life.

Cleaning and Conservation

Daily cleaning is essential for a long equipment life. It is extremely important to eliminate types of dirt from the equipment.

For owner satisfaction and equipment conservation, we recommend:

- Clean all equipment components thoroughly.
- Do not throw water on the electrical parts of the equipment.
- Lubricate the specified parts with the grease recommended in the maintenance plan.
- Take care not to get dirt on the steel cable reels.
- The steel cables must always be taut so that they do not unwind on the reel, and for this reason it is recommended not to unwind the cables more than necessary to perform the mast's movement.
- The steel cables must be well lubricated periodically, protecting them from corrosion and reducing internal and external friction, increasing their durability.
- Burnt oil must never be used to lubricate the cables, because it is an acid liquid that accelerates the corrosion process and presents particles that increase cable wear by abrasion.
- Some signs indicate the right time to replace the wire rope, the most common being: broken wires, accentuated corrosion on the rope, visible wear on the outer wires, bending and crushing.
- If any electrical cable has its protection broken, it must be repaired before the tower is put into operation.
- For cleaning of the motor and generator see their maintenance guidelines, specified in this manual.

Environmental Protection

Electrical equipment at the end of its useful life must not be disposed of in household waste. Please take it to a return point.

Please inform yourself about the nearest return point in your municipality or point of sale.

Maintenance Plan

For a better conservation and durability of the equipment, it is recommended that at the end of the work day a complete cleaning is done, removing any kind of dirt from its components.

It is also recommended to execute the Maintenance Plan with the frequency informed for each of the related actions:

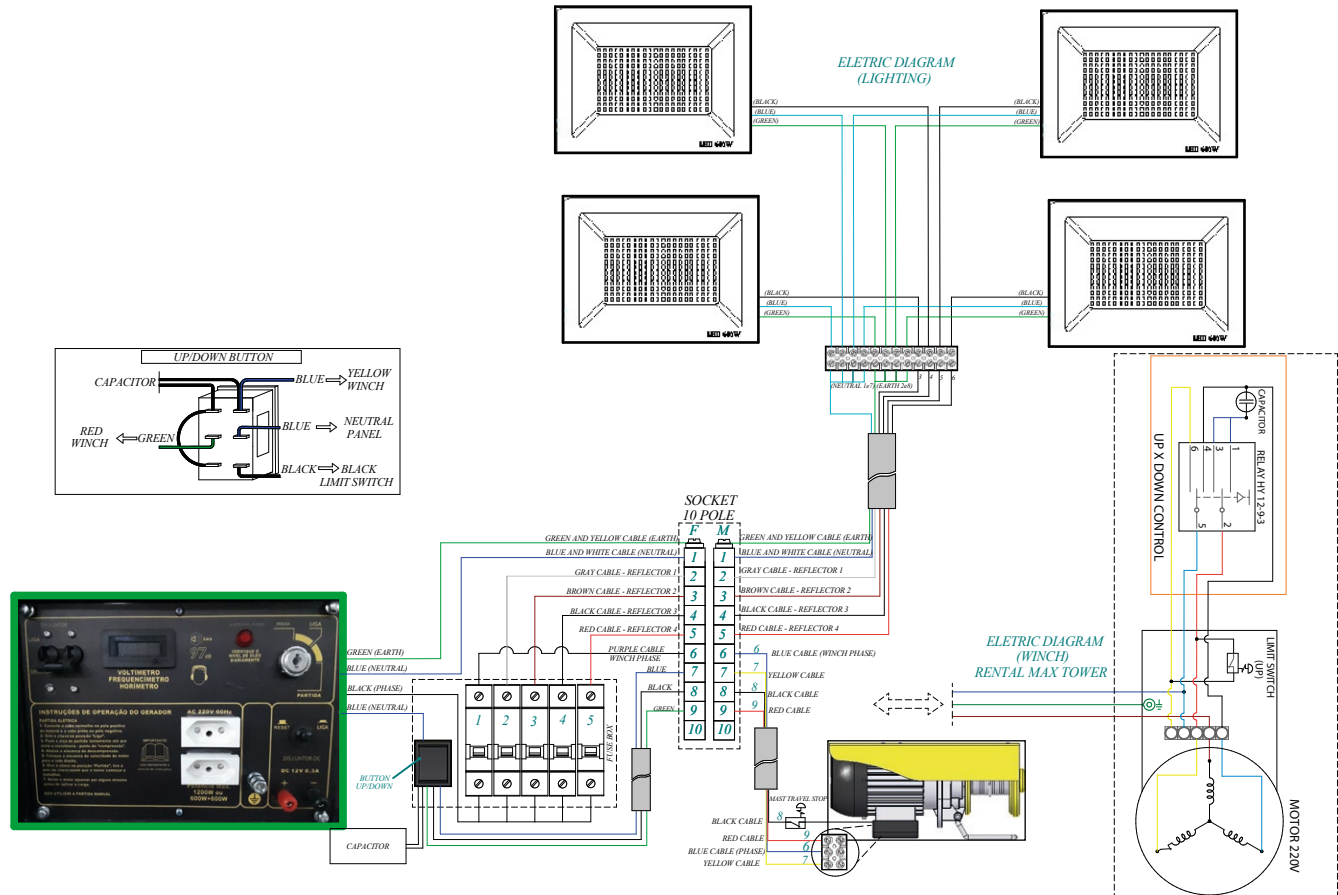
Tower Maintenance Plan

PROFESSIONAL AND RENTAL MAX TOWER MAINTENANCE PLAN						
I = Inspect IR = Inspect and replace if necessary L = Lubricate R = Replace	Initial inspection (First operating hours)	Daily	Weekly	Monthly	Every 12 months	Observations
MECHANICAL SYSTEM						
Greasing Points	I		L			See orientations on page 14 of this manual.
Wire Rope Windings	I		L	IS	S	Note the existence of broken wires, wear, plagues and dents.
Screw Tightening			IS			Retighten the screws.
Ratchet Winches (Professional Tower)	I	I			IS	Friction brake system. Check operation before raising the mast.
Mechanical Locks (outriggers and Mast)				IS		
Generator Group Cushions				I	IS	Check for cracks or tears that compromise the fastening and stability of the assembly.
Engine, Generator and Hoses						Refer to the maintenance guidelines for the respective items included in this manual.
ELECTRICAL SYSTEM						
Electrical Wiring Condition	I	IS				Check for bare, loose, cut cables, etc.
Control Panel				IS		Check that the components are functioning normally (plugs, emergency switches, circuit breakers, etc.).
Engine Harness	I	IS				Check that no cables are damaged. Bare wires can cause a short circuit. It is recommended to disconnect the negative battery cable when the machine is not in use or in transit.
Distribution Boxes	I			I		Open and check that all cables are properly connected.
ILLUMINATION SYSTEM						
Reflectors	I	IS				Check that the reflectors are well fixed (risk of falling).

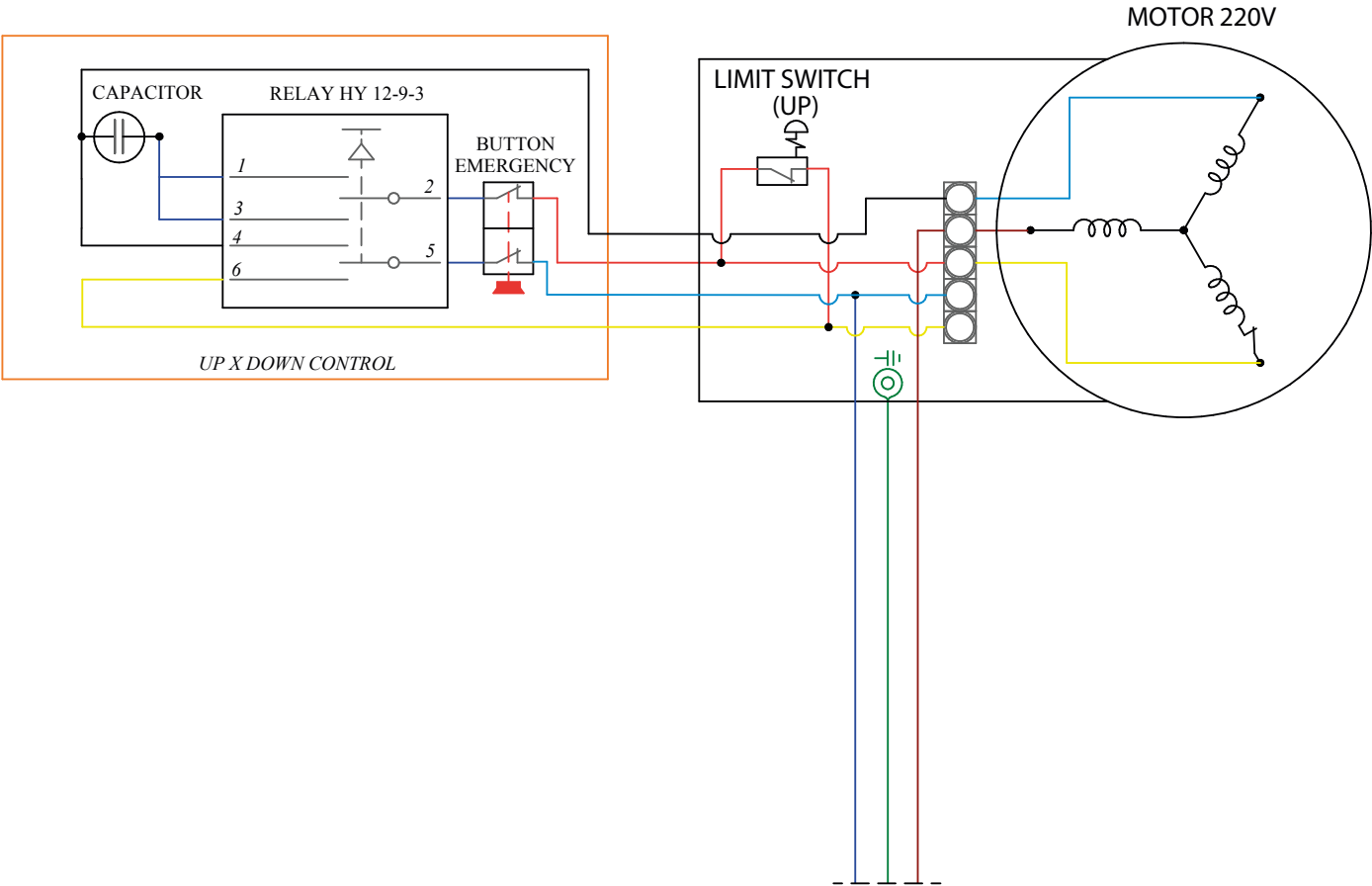
Engine Maintenance Plan:

ITEM	PERIOD OF REGULAR SERVICE	Daily	In first month or every 20 hours	In 3rd month or every 100 hours	In sixth month or every 500 hours	Every year or every 1000 hours
Check and refill fuel		X				
Drain fuel			X			
Check and refill lubricating oil		X				
Check for fuel leakage		X				
Check and tighten the fasteners		X			X (Tighten the cylinder head bolts)	
Change lubricating oil			X (1st time)	X (2nd time)		
Wash the lubricating oil filter					X (Change if necessary)	
Change air filter		(Maintain more frequently when used in dusty areas)			X (Replace)	
Clean the fuel filter					X	X (Replace)
Check fuel injection pump					X	
Check fuel injection nozzle					X	
Check fuel line					X (Change if necessary)	
Adjust the valve clearance: intake [0.10 mm] and exhaust [0.15 mm].			X (1st time)		X	
Replace the engine intake and exhaust valves.						X
Replace the piston ring						X

Electric Diagram

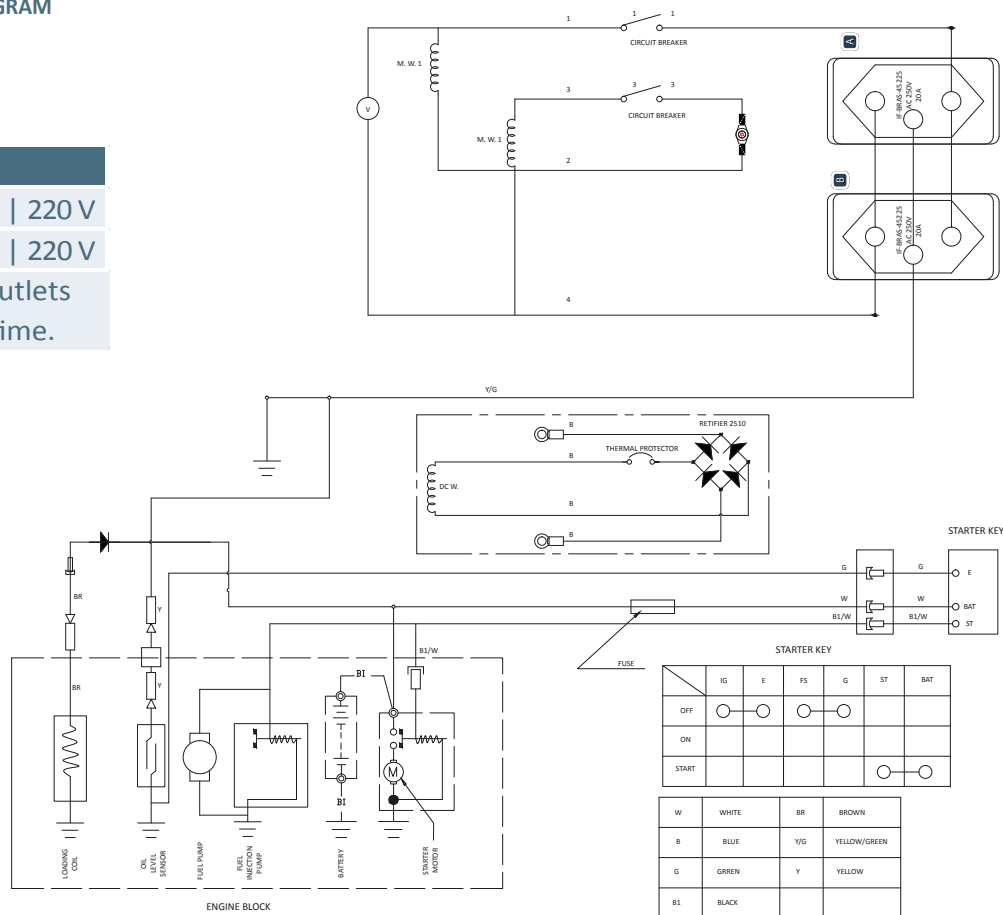


ELECTRIC DIAGRAM OF THE WINCH (RENTAL TOWER)

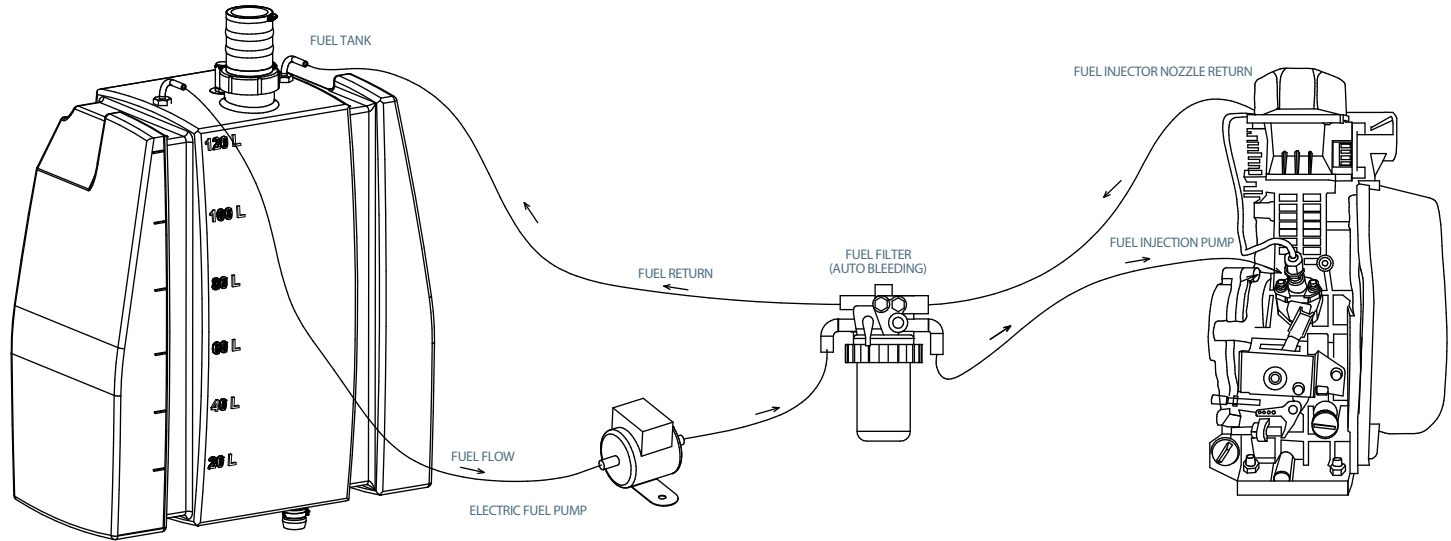


GENERATOR MOTOR ELECTRIC DIAGRAM

PLUGS	
A	2000 W 220 V
B	2000 W 220 V
Not use both outlets at the same time.	



Diesel Fuel System Diagram



Troubleshooting

PROBLEM	OBSERVATIONS	CAUSE	CHECKS AND REPAIRS
Does not produce no-load voltage.	It doesn't have remaining tension.	- Loss of residual magnetism.	- Passing a continuous current through the brush holders using a 12V battery.
	It has remaining tension.	- Excitation interrupted. - Rectifier short circuit. - Bad contact in the brushes.	- Check the continuity of the circuit. - Check diodes individually. - Check and seat brushes on the rings.
Does not reach rated no-load voltage.	Normal rotation. Vibrations with load.	- Insufficient rotation. - Coils short circuit. - Induced short circuit.	- Adjust the motor speed. - Compare resistance values between coils. - Check mains. - Check output windings.
When driving loads the voltage drops.	All in order in empty.	- Insufficient rotation. - Low load power factor.	- Lack of motor power. - Correct power factor of loads.
Overheating.	Heats in general. Vibrations under load. Overheating from stator. Heating of bearings. Dirty machine.	- Overload. - Armature short circuit. - Coils shorted circuit. - Air intakes clogged.	- Do not exceed rated electrical current. - Check electrical network. - Check the output windings. - Compare resistance values between coils. - Clean.
Voltage above nominal at no load.	Normal rotation.	- Rotation above rated speed. - Rectifier diode open.	- Set the motor speed to nominal. - Replace the rectifier.
Oscillations of the output voltage.		- Unstable rotation. - Worn brushes. - Lack of pressure in the brushes.	- Check traction motor and coupling. - Check and replace. - Check and replace spring.
Excessive noise.		- Damaged bearing.	- Change.

Starter motor with difficulty to start.		- Battery capacity too low. - Incorrect grade of lubricating oil. - Fault in electrical connection. - Fuel pump failure.	- Recharge the battery. - Replace with oil grade as specified. - Check connection. - Check fuel pump.
Lamp does not turn on.		- Lamp receives no power.	- Check the electrical connections of the reflector. - Check electrical connections in distribution box and 10-pole sockets.
		- Broken or burned out lamp.	- Replacement with another lamp of equal power and characteristics.
		- General circuit breaker off.	- Turn on the main circuit breaker for the lamps, located in the electrical panel.
		- Circuit breaker loose or broken.	- Ask an electrician to replace the part with another equal or of the same characteristics.
		- Emergency key pressed.	- Put the emergency key back into working position.
Reflector with low luminosity.		- End of life of the reflector.	- Replacement with another lamp of equal power and characteristics.
		- Low tension.	- View item below.
High or low tension.		- Inadequate motor rotation.	- Set the engine speed to 3,600 rpm when the generator is off load.
		- Worn generator brushes.	- Check and change the brushes.

Product Warranty

The warranty is not transferable under the conditions and within the prescribed period and will be valid from the date of purchase of the equipment, through presentation of the sales invoice to the first end consumer. At the time of delivery of the equipment, the customer must receive the information and technical guidelines for the equipment as per the content of this manual.

Therefore, defects caused by mistreatment, carelessness, negligence, recklessness or malpractice, are not covered by this warranty, nor are any repairs or alterations of any part and/or piece of equipment. Also not covered is any assembly of the parts by any party other than the factory itself or Technical Assistant, application outside the specification, mechanical or electrical overloads or phase failure, use in an environment for which it was not designed, incorrect voltages of frequencies, incorrect lubrication, damage caused by accidents of any kind, such as floods, strong winds, fires, landslides or resulting from transportation.

The removal or alteration of the serial numbers originally placed on the product void the warranty, which must be presented on the sales invoice and the Warranty Certificate for the equipment in question.

The warranty assumed is limited to the repair, spare parts or parts assembly of the set of parts, in which the review is conducted by an Authorized Menegotti Technical Assistant and authorized in advance by the Factory, to double check the existence of the manufacturing defect. This repair or exchange will be made by an Authorized Technical Assistant, with the buyer bearing the risks or costs of transportation to and from the Technical Assistant, with the labor and replaced parts being free, under the terms of this warranty.

This supersedes any other warranty, express or implied as well as any and all liability or responsibility of our company concerning the above product.

MENEGOTTI After Sales and Technical Assistance departments.

Warranty Term

By the present CERTIFICATE provided from original purchaser, Menegotti guarantees this product against manufacturing defects, for a period of 6 (six) months, being: the first 3 (three) months of legal guarantee, and the last 3 (three) months a special warranty guaranteed by Menegotti, counted from the invoice issue date of the first final consumer. The components of daily use such as: bearings, clutch disc, gears, tires, brake shoes, etc. are not included in the warranty.

This warranty includes spare parts and repair against manufacturing defects duly verified by the factory or Authorized Technical Assistance. The warranty for this product will be void if it suffers damage caused by accidents, natural events, application outside the specification, or in the case of alterations or repairs by a person or workshop not authorized by Menegotti. The product freight charges, including the technical assistant or factory, are borne by the consumer. Menegotti has a wide network of Technical Assistants throughout the country.

If the equipment is purchased with the electric engine warranty covers defects arising from the internal engine manufacture. Not covered by warranty defects of: broken or crushed shell due to carelessness in transporting/or storage, energization of the motor coupling or out specification defects, general misuse and /or incorrect installation, overcharging due to lack or excess of phase and use of voltage out of the specification.

Aware of this term,

Customer: _____
Model: _____ **Serial Number:** _____
City: _____ **Date:** _____

Customer

Menegotti Authorized Service



Solid values, **sustainable future.**

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Unit • Unidad Mentec

José Theodoro Ribeiro, 2399 - Ilha da Figueira
Jaraguá do Sul - SC - 89258-468



Unit • Unidad Menfer

Saudade, 186 - Seminário
Corupá - SC - 89278-000



Unit • Unidad MNA

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