

Safety

Most accidents that occur during crane operation and maintenance are caused by failure to observe the basic safety rules and precautions. Before operating your crane or performing maintenance, read and become familiar with all the safety precautions and recommendations given in this section. Remember that failure to observe even a single precaution could involve you and the people around the crane in a serious accident.

Foreseeing potential dangers is vital for preventing accidents. All personnel working with the equipment, including the supervisor and crane operator, should be sensitive to dangerous situations and take the necessary measures to prevent accidents.

Safety precautions and recommendations are outlined in this section and are also included in the operation and maintenance instructions given in subsequent sections.

Warning labels are also provided on the crane .

The cautionary instructions in this manual and on the labels are identified as "DANGER", "WARNING", "CAUTION" or "NOTICE". These terms are defined as follows:


DANGER

 **DANGER** indicates an imminently hazardous situation, which, if not avoided, could result in death or serious injury.

WARNING

 **WARNING** indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION

 **CAUTION** indicates a potentially hazardous situation, which, if not avoided, may result in a minor or moderate injury.

[NOTICE]

◆ **NOTICE** indicates an important operational or maintenance procedure or condition, which, if not strictly observed, can result in damage to machine components or deteriorated machine performance.

It is virtually impossible to anticipate every situation that might present a hazard. The safety precautions given in this manual and on the crane decals are not exhaustive. It is important, therefore, to strictly follow the instructions in this manual and be sensitive to potential dangers in order to prevent bodily injury and damage to the equipment.

Remember that your most important duty is to ensure the safety of you, your co-workers and any other people in the area.

Safety Rules

⚠ WARNING

⚠ Use of improper or unauthorized methods during operation or maintenance of this crane is very dangerous, and may cause serious injury or death. Before using this, be sure to read this manual thoroughly to understand the proper operating and maintenance procedures. Do not operate the equipment or perform maintenance until you understand the contents of this manual.

⚠ CAUTION

⚠ The "Safety Rules" section describes general instructions about operation and maintenance of the cranes. For more detailed instructions about your crane, be sure to read the corresponding pages (white pages) of this manual.

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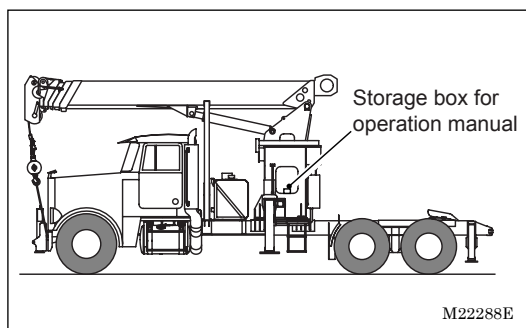
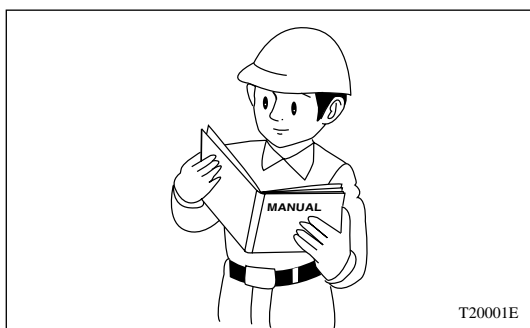
Before Operation

▲ Study the Operation and Maintenance Manual

Improper operation, inspection or maintenance may cause damage to the crane equipment or result in serious injury or death. Be sure to read through this manual carefully to become sufficiently familiar with the procedure for operation, inspection and maintenance of this crane.

Never attempt to operate, inspect or perform maintenance on the equipment until you are familiar with the correct procedures.

Keep this manual in the specified position for reference at all times.



▲ Follow All Instructions and Warnings

This manual and the decals (nameplates) affixed to the crane include instructions that must be observed to ensure safety. Be sure to read these instructions first to understand them. Neglecting these instructions and warnings may result in injury or death.

If this manual or any of the decals are lost or illegible, contact the nearest TADANO distributor or dealer for replacement.

▲ Wear Proper Clothing

Sloppy clothing may cause your jacket sleeve or pants cuff to be caught on an edge of the equipment or on one of its control levers, resulting in an accident.

Be sure to wear clothing that properly fits your body. Exercise particular attention to the jacket sleeves and pants cuffs to make sure that they are properly buttoned or rolled up. Also make sure that your shoe laces are not excessively long.

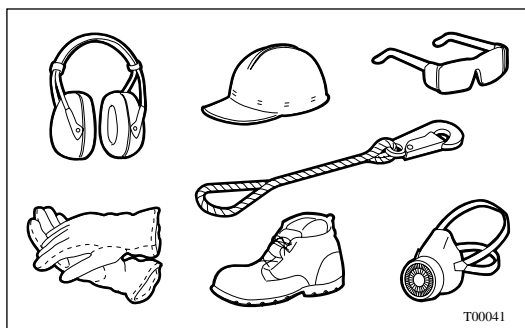
Do not wear clothing stained with oil, because it could easily catch fire.



⚠️ Wear Approved Protective Gear

To ensure safety, be sure to wear a hard hat and safety shoes during operation. You must also wear other protective gear such as safety goggles, a dust mask, ear plugs, protective gloves and a safety belt, depending on the work conditions.

Make sure that all protective gear normally functions before wearing it.



⚠️ Perform the Pre-Operational Inspection and Warming-up

Failure to perform inspection, maintenance or warm-up of the truck engine on a daily basis causes the service life to be reduced, or may result in accidents.

Before starting each day's operation, be sure to perform pre-operational inspection and warm up the engine to make sure that the truck operates normally and has been properly maintained. If the equipment is found to be defective, inform the supervisor of the details, repair the problem, and then re-start the operation. Particularly in winter, make sure that the engine is sufficiently warmed up before operation.

⚠️ Check the Control Lever Positions Before Engaging the PTO

The truck engine may initiate some mechanical or hydraulic function as soon as the PTO is turned ON, depending on the position of the control levers, resulting in a serious accident. Before engaging the PTO, make sure that all control levers are set to the proper position.

⚠️ Provide Sufficient Illumination during Night Work

Operation in the dark makes it difficult to ensure good footing and to locate persons or obstacles around the crane. This increases the probability of an accident.

When operating the crane at night, use the working lamps so that motion and the load can be clearly seen. Also provide additional lighting equipment to illuminate the surrounding area.

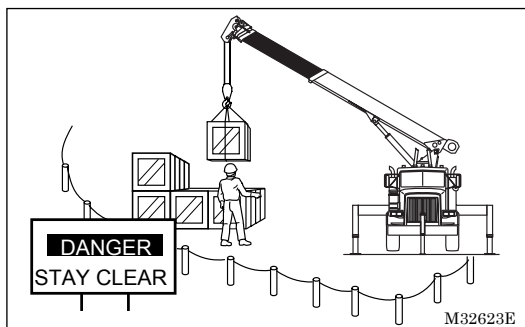
⚠ Do Not Allow Unauthorized People to Enter Work Site

Unauthorized people or vehicles in the work site may result in a collision, injury or death.

Before starting operation, make sure that there are no unauthorized people in the work site.

Also, post a "STAY CLEAR" sign and make proper arrangements (by providing fences or by posting security personnel) to keep unauthorized persons out of the site.

When the crane must be operated under heavy traffic, post a person to control traffic.



⚠ Anticipate Accident Situations

To deal with possible accidents or fires, provide a first-aid kit and fire extinguisher. Make sure that working personnel know the location and proper usage of this equipment.

An emergency contact person and emergency liaison plan should be carefully prepared, and all concerned personnel must be informed of the details.

⚠ Observe Working Rules

Neglecting work site rules may result in accidents. To ensure safe operation, observe all working rules covering prohibited practices, precautions, and correct procedures.

⚠ Assign a Signal Person

During operation of the crane, assign a person to give instructions to the operator. Be sure to observe his/her instructions, particularly in the following conditions:

- When operating the machine near power lines.
- When the operator cannot see the load.
- To move the crane through a narrow path, or in the direction where the operator's view is blocked.

⚠ Always Maintain Decals

The warning decals on various parts of the machine provide important instructions for safe operation. Always keep the decals (labels) clean and visible.

Should decals become lost or damaged, order replacements from the nearest authorized TADANO distributor or dealer.

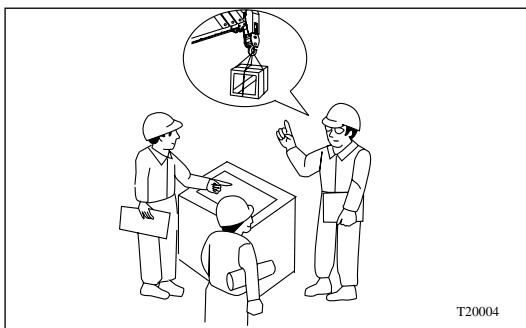
▲ Hold Work Site Meetings with Concerned Personnel

Neglecting to hold a meeting with concerned personnel and have sufficient communication among relevant workers may result in accidents.

Before starting operation, discuss the following details thoroughly with the supervisor, rigging personnel, signal person, and all other concerned personnel.

Be sure to follow the determined matters.

- Review the weight (of the load) of load, lifting height, place to load and unload the truck, crane installation site, operating procedures, rigging procedure, etc. (to be determined based on the rated lifting capacity table)
- Study the ground conditions of the crane installation site, and check whether there are buried objects such as tap water piping or gas piping.
- Review how to prevent an overturn accident (for example, use of base blocks and extension of the outriggers).
- Assign a signal person and rigging personnel, and ensure mutual understanding of the signaling method.
- Determine off-limit areas and provision of barricades (fences, rope, etc.)
- Review the working positions of all relevant workers.
- Review the emergency liaison plan, emergency contact person, and safety/health organization.



▲ Study Work Site Conditions Carefully

Operating the crane without thorough attention to the surrounding conditions may result in accidents.

Before starting work, be sure to inspect the work area, paths to the work site, the presence of any obstacles and the locations of other machinery.

Check the work position so that you will not be caught in the equipment in case of an overturn accident.

▲ Determine a Signaling Method for Multi-Crane Operation

When two or more crane work together, assign a signal person and ensure mutual agreement on the signaling method. The operator must operate the crane cautiously according to the instructions given by the signal person.

⚠ Avoid Overwork. Do Not Operate the Crane under the Influence of Alcohol or Drugs

If you are exhausted due to overwork or lack of sleep, or are under the influence of drugs or alcohol, your attention will be diverted. This may affect your judgement in an emergency, resulting in an accident.

Be in good physical condition before operating the equipment. Do not operate the crane when you are in poor physical condition or under the influence of drugs or alcohol.

Rules for Operation (Outriggers, Stabilizers)

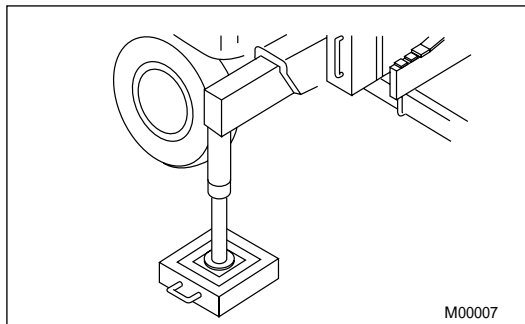
▲ Set the Outriggers and Stabilizers on Firm Level Ground

Be sure to set the crane outriggers and stabilizers on firm level ground.

Operating the crane without extending the outriggers and stabilizers may result in an overturn accident. To operate the crane, be sure to extend the outriggers.

Do not set the outriggers on soft ground where sinkage, landslide or collapse may occur, or near an excavated hole or road shoulder.

If it is absolutely necessary to set the outriggers and stabilizers on soft ground, insert base blocks (steel plates) with sufficient strength and size to stiffen the ground surface and prevent the machine from overturning.



▲ Pay Attention When Extending Jacks

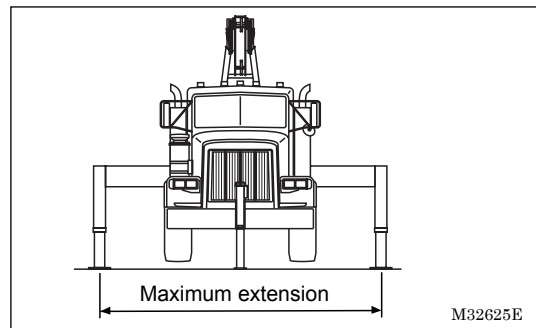
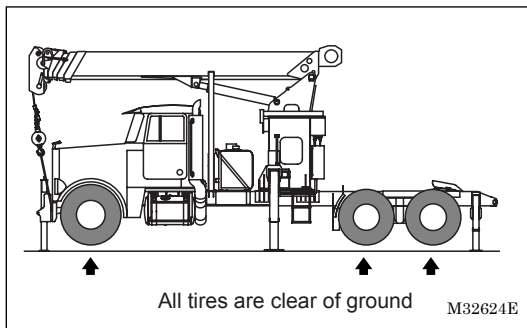
When extending jacks, keep other personnels away from the outriggers and stabilizers to avoid feet being crushed under an extended jack.

⚠ Set the Outriggers and Stabilizers Properly

- Always extend the outriggers to the maximum width. Even if the crane can be operated with the outriggers set to the minimum or middle extension width, make it a principle to set the outriggers to the maximum width to ensure safe operation.

If it is absolutely necessary to operate the crane with the outriggers set to the minimum or middle width, make sure that the actual load does not exceed the rated capacity corresponding to the actual outrigger extension width.

- Set the outriggers and stabilizers so that the crane bare frame is levelled.
- Extend the jacks of the outriggers and stabilizers until all the tires clear the ground.



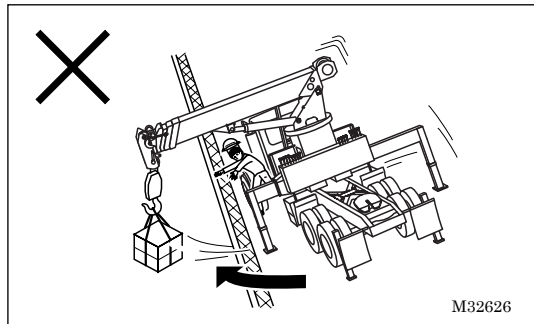
⚠ Secure the Front Outriggers with Lock Pins

If a front outrigger is not secured with a lock pin, it may retract during crane operation. After extending the front outriggers, secure them with lock pins.

⚠ When the Outrigger Extension Widths are Different between Right and Left

If it is absolutely necessary to set the outrigger beams at the right and left to different extension widths, make sure that the actual load does not exceed the rated capacity corresponding to the smaller outrigger extension width. If you swing the boom carelessly from the side with the longer outrigger beam to the other side with the shorter outrigger beam with a load lifted, the truck may overturn.

To swing the boom to the side with the shorter outrigger beam, make sure that the actual load is not larger than the rated lifting capacity corresponding to the outrigger extension width.

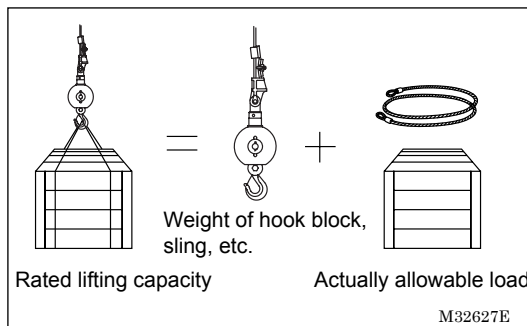


Rules for Operation (General)

⚠ Do Not Lift a Load Exceeding the Rated Lifting Capacity

The rated lifting capacity is determined based on the crane strength and carrier stability. If the crane lifts a load exceeding the rated lifting capacity, the truck may be damaged or overturn. Before lifting a load, be sure to review the lifting capacity of your crane, referring to the rated lifting capacity table. The lifting capacity varies depending on the boom length, load radius, boom swing position, etc.

The rated lifting capacity includes the weight of the hook block, sling, etc.



⚠ Use Safety Devices Correctly

Improper use of safety devices including the AMA can lead to damage or overturn the crane. Use all safety devices according to instructions in the manual.

⚠ Do Not Rely Exclusively on Safety Devices

A safety device is not a substitute for human skill and judgment.

AMA, for example, does not warn the operator about conditions on the ground, effects of wind, improperly adjusted devices, load being pulled sideways, or other possibly hazardous situations.

All safety devices are merely auxiliary means to help the operator perform the task at hand. Safe crane work requires the qualities of a good operator, such as skill, experience, judgment, and safety awareness.

⚠ Do Not Deactivate Any Safety Devices

Avoid any action that impairs normal operation of the safety devices.

Intentionally deactivating any safety device may result in the inability to detect overloading or overwinding during operation, and lead to a serious accident.

Ensure that all safety devices are functioning correctly before starting any operation.

⚠ Before Lifting a Load

If the rigging procedure is improper, the load may drop, resulting in an accident.

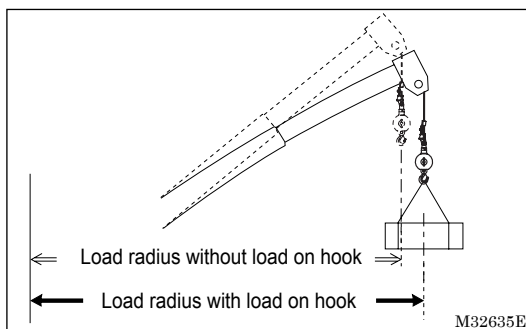
Before lifting a load, check the following points:

- The actual load does not exceed the rated lifting capacity.
- The load is securely rigged with a proper lifting attachment.
- The hoisting wire rope is vertical so that the load can be lifted straight up.
- The safety latch of the hook block functions normally.
- The wire rope is not tangled or irregularly wound.
- The wire rope, chain and other lifting attachment have sufficient strength, and they are not damaged or worn.
- The load is slung from a point just above its center of gravity so that the load is not overturned or removed from the lifting attachments when it is being lifted from the ground, and that the lifting attachments are not crossed or tangled.
- When rigging a load having a sharp edge, attach a softener pad to the sharp edge to prevent the rigging, wire rope or load from being damaged.

⚠ When Lifting a Load, Consider Boom Deflection

When a load is lifted, the load radius increases due to the boom deflection. In this condition, the load swings forward and backward, and the crane may be overloaded.

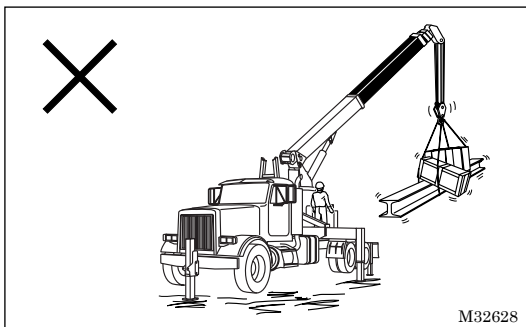
If the load swings when it is being lifted from the ground, place the load on the ground to prevent the load from swinging. Particularly, when lifting a heavy load or the boom is substantially extended, consider the increased load radius before lifting a load.



⚠ Lift Only One Load at Once

Do not lift two or more loads at once, even if the total weight of these loads does not exceed the rated lifting capacity. Otherwise, the loads become unbalanced, or all the loads cannot be carefully observed, which may result in an accident.

Lift only one load at a time.



⚠ Start Operation After the Engine Speed is Stabilized

Operating the crane at the idling speed may cause the load to swing due to fluctuations in engine speed.

Increase the engine speed gradually until it is stabilized, and then start operation.

⚠ Operate According to Signals

During operation, obey the signals and instructions given by the signal person. However, an emergency shut down signal must be acknowledged whoever gives it.

⚠ Lift a Load Clear of the Ground by Hoisting Up, Other than Raising or Extending the Boom, Perform Winch Operation, Instead of Boom Elevating/Extending Operation

When lifting a load from the ground, be sure to use the winch operation. Lifting a load from the ground by raising or extending the boom causes the load to swing, which may result in an accident. When a load is being lifted from the ground, stop the operation when the rigging rope is stretched, and make sure that the load is balanced with respect to its center of gravity, is not stuck to the ground, and will not hit surrounding objects.

Lift the load straight up. Stop the operation again to stop the swing of the load when it is a few inches above the ground, and make sure that the rigging condition is proper, the load is securely held at that position, and the crane is not overloaded. Then, re-start the operation.

⚠ Do Not Attempt to Lift an Object Subject to Restraining Force

If you attempt to lift a buried object such as plants or a structure embedded in the ground, unexpected stress is applied to the truck and crane, which may cause the equipment to be damaged or overturned.

Do not attempt to lift an object driven or sunk into the ground such as a pillar or stake, or an object buried in mud or sand such as a plant.

The crane is designed to lift objects that are completely free from any restraining force.

⚠ Make Sure That the Crane Is Not Overloaded

If the actual load almost reaches the rated lifting capacity, the crane may be overloaded when the load swings. In this condition, exercise extreme caution when operating the crane.

When extending or lowering the boom, make sure that the crane is not overloaded, since these actions increase the load radius.

⚠ When the Crane is Overloaded

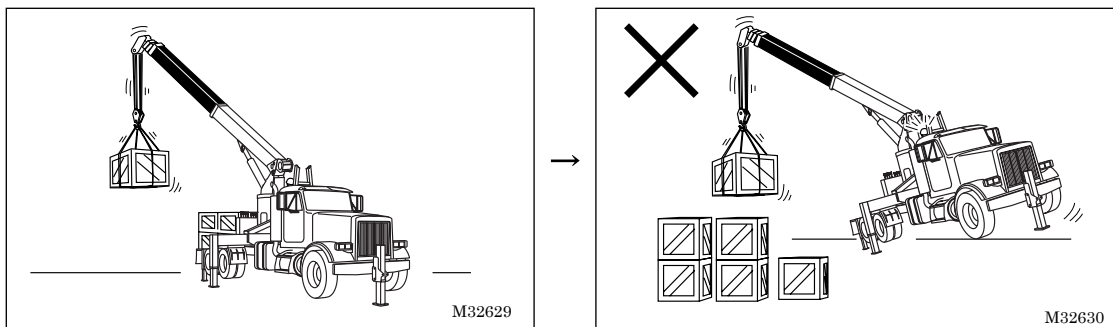
It is dangerous to raise or lower the boom abruptly when the crane is overloaded, since these actions may cause the truck to overturn. In this condition, lower the load onto the ground immediately through winch operation.

⚠ When Removing a Load from the Truck Deck, Pay Attention to the Carrier Stability

The stability of a bare truck is largely different from a truck with a load placed on the truck deck. As the load mass is reduced, the carrier stability will deteriorate. Pay attention to vehicle stability, particularly when removing loads from the truck deck.

When removing loads from the truck deck, observe the following instructions to prevent an overturn accident.

- Make sure that the actual load is not larger than the rated lifting capacity.
- To remove many loads from the truck deck, unload them one by one from the rearmost side so that the load radius decreases in sequence.
- To swing the boom from the over-rear area to the over-side area, lower the load close to the ground after the load is moved out of the truck deck, and then start swinging the boom.



⚠ Pay Attention When the Load or Hook is Difficult to See

Operating the crane without ensuring visual safety while the load or the hook block is out of the operator's view blocked by the cab may result in a collision, injury or death.

When the load or hook block is difficult to see from the operator's position, post a signal person.

The operator must obey the signals and instructions given by the signal person.

⚠ Operate the Control Levers Carefully

Operating the control levers abruptly and carelessly causes the load to sway and can result in impact or damage to the machine. It also causes the crane to be overloaded, and may result in an overturn accident. Be sure to operate the control levers slowly and carefully.

⚠ Swing the Boom Carefully

When the boom swings at a high speed, the load radius is increased due to centrifugal force on the load. This effect causes the crane to be overloaded, and may result in an overturn accident. On the other hand, if the boom swing is abruptly stopped, the load swings due to the inertia force. This action is dangerous for surrounding people or objects, and may damage the boom or other components.

Be sure to swing and stop the boom slowly. In particular, when the boom is substantially extended, exercise thorough attention.

⚠ Exercise Caution When Simultaneously Operating Two or More Controls

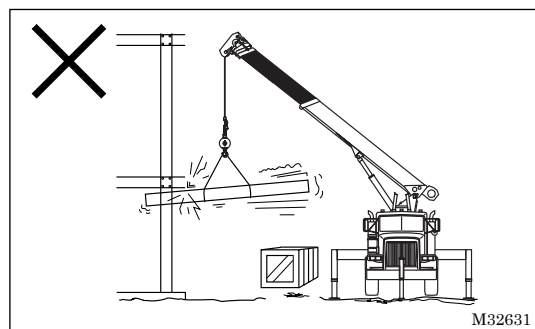
When two or more controls are simultaneously operated, the crane operation speed may be reduced compared to when a single control is operated. On the other hand, when you switch from a multi-control operation to a single control operation, the operation speed will be increased. When operating two or more controls at the same time, pay attention to avoid an abrupt change in the operation speed.

If an inexperienced operator handles two or more controls simultaneously, the machine may be improperly operated. Do not attempt to operate two or more controls simultaneously until you are perfectly familiar with the multi-control operation.

⚠ Be Careful to Prevent Collision with Surrounding Objects

When moving a load, be careful to prevent the load from hitting against a part of the truck or surrounding objects.

When operating the crane in a place with many obstacles, be sure to post a signal person. To prevent a collision, the operator must move the load according to the signals and instructions given by the signal person.



⚠ Do Not Extend the Boom Longer Than Required

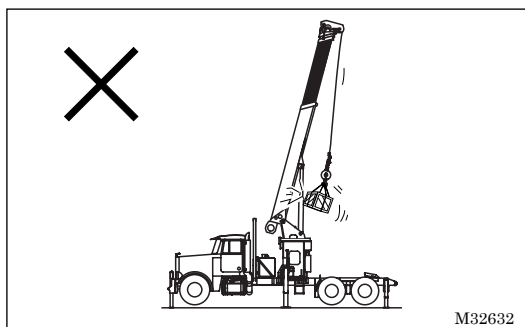
When the boom is extended longer than required, the rated lifting capacity is reduced. This also causes the load to swing, and decreases work efficiency.

Make the boom as short as possible, for the intended work.

⚠ Exercise Caution When the Boom Angle is near the Upper Limit

When the boom is raised to almost the upper limit angle, the clearance between the boom and the load becomes small. If the load swings in this condition, it may hit against the boom or the boom elevating cylinder, resulting in damage to the load, the boom and boom elevating cylinder.

When the boom angle is near the upper limit, operate the crane carefully to prevent the load from hitting against the boom and the boom elevating cylinder.



⚠ Be Cautious about Hydraulic Oil Temperature

When operating the crane, pay attention to make sure that the hydraulic oil temperature does not exceed 180°F (82°C). If the hydraulic oil temperature exceeds 180°F (82°C), the high-pressure hose and seals will be damaged by heat, and hot hydraulic oil can leak out, resulting in a fire deflagration.

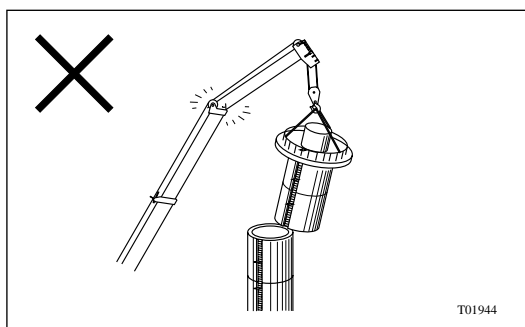
During operation, observe the following instructions:

- If the hydraulic oil temperature exceeds 180°F (82°C), stop the operation. Wait until the oil temperature lowers, and then re-start the operation.
- Be cautious about the oil temperature when the ambient temperature is high in summer.

Also, exercise particular attention when operating the winch at a high lifting height, or operating the crane continuously at high engine speed, since these operations will further raise the oil temperature.

⚠ Exercise Caution When Lifting a Dismantled Structure

It is very dangerous to lift a dismantled structure whose weight and center of gravity are unknown. Do not lift a load whose weight and center of gravity are unknown. Before starting operation, thoroughly discuss the load weight, its center of gravity and the work process with the supervisor.



⚠ Exercise Caution When Lifting a Load Submerged in Water

A load being lifted out of water may be heavier than expected, since it is impregnated with water. Do not lift such a load rapidly. Lift slowly, allowing water to drain from the load.

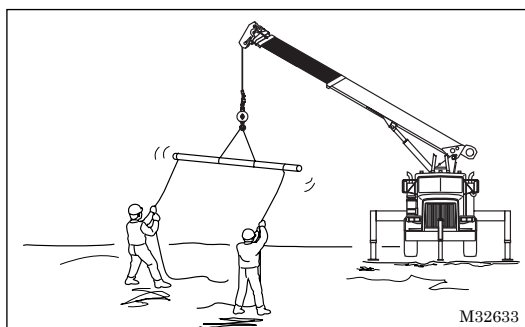
After a load is lifted from water, it become heavier due to loss of buoyancy, even if water is completely drained from the load.

Exercise thorough caution so that the crane is not overloaded.

⚠ Exercise Caution When Lifting a Long Object

When a long object is being lifted, it may rotate. Be careful to prevent the load from hitting the rigging personnel, crane or surrounding objects.

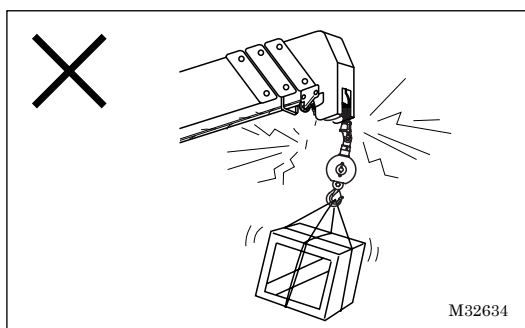
Attach a proper guide rope to one or both ends of the load to position the load, and to prevent the load from rotating or swinging.



⚠ Do Not Wind Up the Hook Block Excessively

As the boom is extended, the hook block will be raised. If the anti-two-block device is deactivated or bypassed, the automatic stop function will not be activated even when the hook block is excessively wound up. If the boom is further extended in this condition, the hook block will hit against the boom tip head, causing the load to drop due to wire rope failure or the machine to be damaged.

Always pay attention to the hook height. If the hook position is too high, let off some wire rope from the winch to lower the hook block.



⚠ Wire Rope Must be Wound Properly on the Winch Drum

Lifting a load with the wire rope irregularly wound on the winch drum results in damage to the wire rope. This also shortens the wire rope service life, and can cause the rope to break.

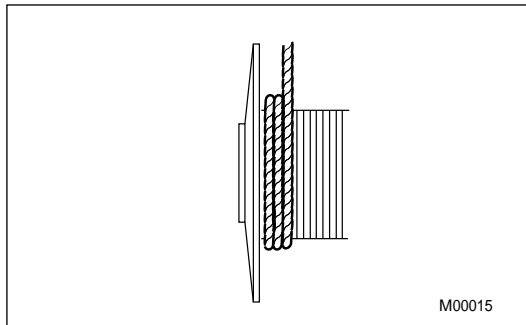
After replacing the wire rope, make sure that it is reeved correctly on the sheaves and winch drum. If the wire rope is irregularly wound, rewind it properly.

⚠ Keep Dead Wraps of Wire Rope on the Winch Drum

If the entire amount of wire rope is let off of the winch drum, the frictional hold back force becomes insufficient, and load is directly applied to the end of the rope, causing damage or breakage of the wire rope.

Always keep at least 3 wraps of wire rope on the winch drum.

Exercise particular attention when the load is lowered below ground level.



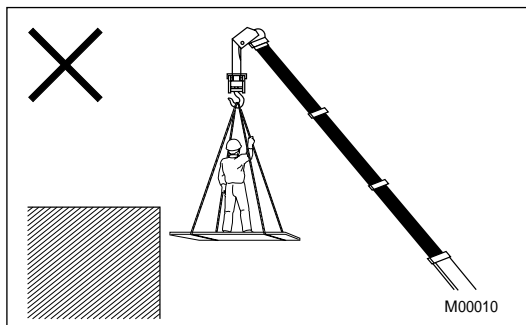
⚠ Do Not Leave a Load Suspended For a Long Time

Do not leave a load suspended for a long time. Consider a work plan so that the load suspension time will be as short as possible.

⚠ Do Not Use the Crane for Unintended Purposes

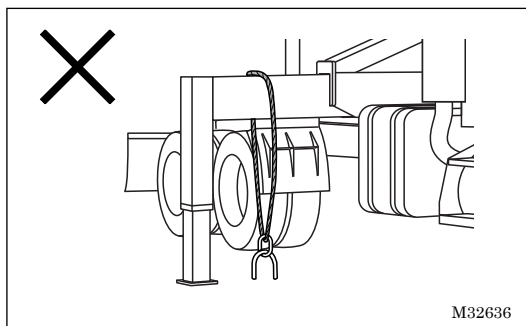
The crane is intended to lift objects.

Do not use the crane for other purposes. For example, do not use the crane to lift a person(s) or push an object with the boom.



⚠ Do Not Anchor the Machine

Do not attempt to lift a load exceeding the lifting capacity by fixing the machine frame or outrigger with wire rope at the side opposite to the load position. Anchoring the truck frame or outrigger may damage the truck and/or crane, resulting in an accident.



⚠ Do Not Divert Attention During Operation

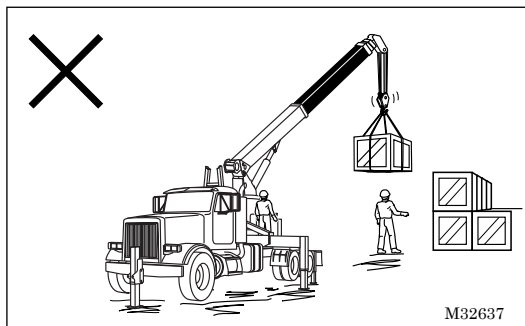
It is very dangerous to be eating, look aside, or undertake other action that may divert the operator's attention during operation.

When operating the crane, concentrate on controlling the equipment while watching the signal person or the load being lifted.

⚠ Do Not Pass a Load Over People

It is very dangerous to pass the hook block or a suspended load over people.

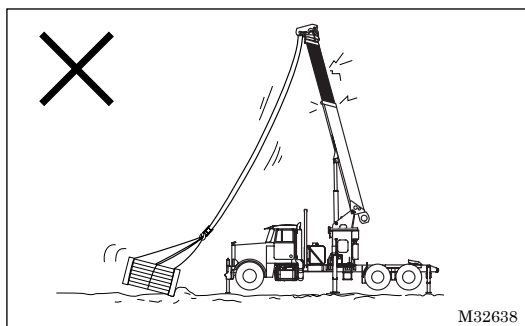
Do not allow anyone to enter the area below the boom or load.



⚠ Do Not Pull a Load Sideways or Toward the Crane, or Lift a Load Obliquely

It is very dangerous to pull a load sideways or toward the crane or to lift a load obliquely. These actions may damage the boom and the boom swing mechanism, and may cause the truck to overturn.

Do not attempt to pull a load located at a distance beyond the load radius toward the crane. To lift a load located at a distance, move the truck close to the load, and lift it vertically.



⚠ Do Not Leave the Crane with a Load Suspended

Do not leave the crane with a load suspended. Before leaving the crane, be sure to take the following actions:

- Lower the load onto the ground.
- Retract the boom completely, and stow it.
- Return the control levers to the neutral position.
- Disengage the PTO. (If your crane is battery-driven, turn OFF the power supply.)
- Stop the engine and remove the key.
- Lock the doors of the truck cab.

⚠ Do Not Allow Anyone to Enter the Truck Driver's Cab

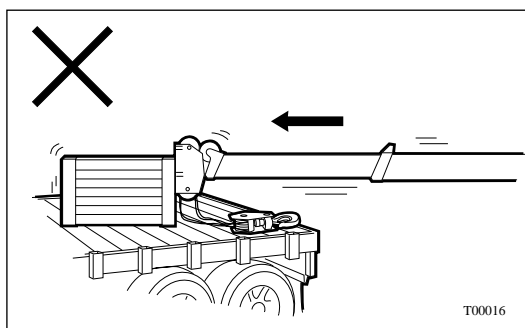
If anyone accidentally steps on the accelerator pedal in the truck driver's cab, the crane operation speed rapidly changes and can result in a serious accident. During operation, do not allow anyone to enter the truck driver's cab.

⚠ Do Not Push or Pull Any Object with the Boom

Do not push or pull any object with the boom. Do not lift up any object with the boom, and do not push the boom against any object.

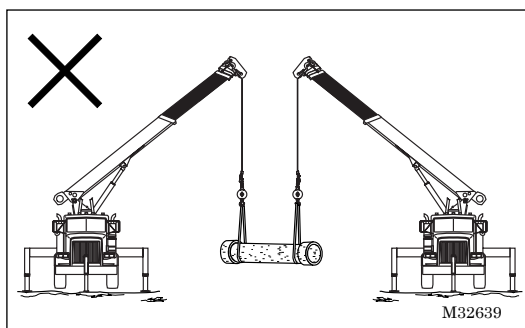
To move an object, lift it with the crane, or use a dedicated machine such as a forklift.

Do not use the crane for other than its intended purpose.



⚠ Do Not Lift a Load with Two or More Cranes

It is dangerous to lift a load with two or more cranes, because this action displaces the center of gravity of the load. This may cause the truck to overturn, the load to drop, or the boom to be damaged. Do not lift a load with two or more cranes.



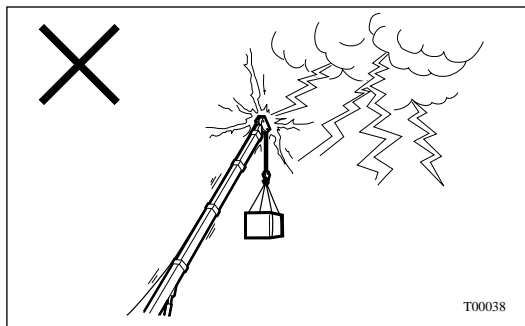
Rules for Operation (Weather)

▲ Stop Operation When Visibility Becomes Poor

When visibility becomes poor due to bad weather such as rain, snow, or fog, stop operation and stow the crane. Wait until visibility improves sufficiently before re-starting operation.

▲ Stop Operation When Lightning is Expected

If the truck or crane is struck by lightning, it will be damaged and the operator and working personnel may be injured or killed. If lightning is forecast, stop operation, then stow and leave the equipment.



⚠ Stop Operation under Strong Winds

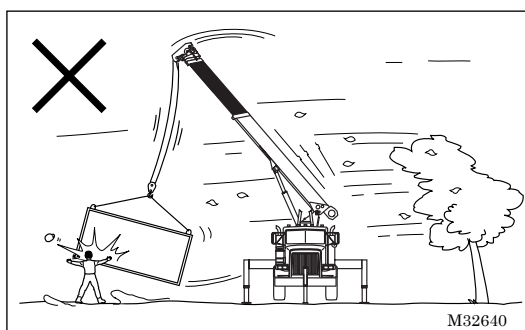
When the crane is operated under strong winds, the load will swing. This condition is dangerous for working personnel and surrounding structures, and also may cause the boom to be damaged or the truck to overturn. Especially, as the boom is extended and if the load size is large in area, the influence of wind is increased.

If the maximum instantaneous wind speed exceeds 20 mph (10 m/s), stop the operation and stow the boom.

When the boom is substantially extended or a large load is lifted, exercise special attention, and stop operation depending on the circumstances, even if the maximum instantaneous wind speed is less than 20 mph (10 m/s).

The table below lists the wind speed ranges and the ground conditions for each range. Note that the wind speeds in this table are those measured at a point 30 ft (10 m) above open level ground.

Wind speed	Ground conditions
12–18 mph (5.5–8.0 m/s)	Dust is raised, paper whirls up, and small branches sway.
18–24 mph (8.0–10.8 m/s)	Shrubs with leaves start swaying. Wave crests are apparent in ponds or swamps.
24–31 mph (10.8–13.9 m/s)	Tree branches move. Power lines whistle. It is difficult to open an umbrella.
31–38 mph (13.9–17.2 m/s)	Whole trees sway. It is difficult to walk against the wind.



⚠ Precautions for Cold Weather

- Remove snow or ice on the crane especially from the boom.
- When the ambient temperature is below freezing, be careful not to let bare skin come in contact with the metallic parts of the equipment. If any moisture is present, your skin may freeze to the metallic surface.
- Warm up the truck engine sufficiently. After warm-up, make sure that the equipment operates normally. Defrost and dry the components, as required.
- Immediately after start-up, run the truck engine slowly until oils and greases fully circulate through all components.
- Make sure that the load does not freeze to the ground. It is dangerous to lift such a load.
- Perform thorough maintenance on the battery. Use oils and fuel rated for cold weather.

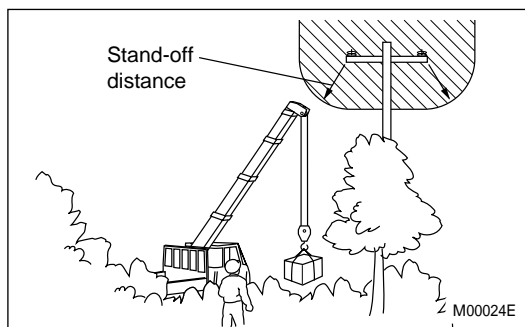
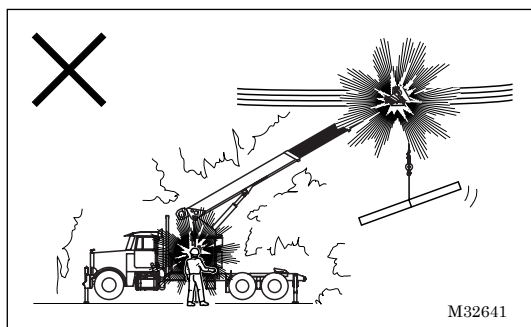
Rules for Operation (Power Lines, Radio Waves)

⚠ Prevent Electric Shock Accidents

Approaching too closely to power lines may result in electric shock accidents, depending on the voltage. If it is absolutely necessary to operate the crane near power lines or distribution lines, take the following actions to prevent accidents:

- Meet with the power company concerned to take necessary safety measures.
- Make sure that the rigging personnel and other concerned personnel wear insulated shoes made of rubber or leather.
- Keep the crane and load away from power lines, at least at the required stand-off distance. (See the table below.)
- Post a full-time signal person to make sure that the crane or load does not approach power lines, and to keep unauthorized people off the work site.
- The operator must pay attention not to touch the truck, crane or load. If it is necessary to control the load position, attach dry guide rope made of fiber to the load to prevent the load from rotating or swaying.
- Do not place a load beneath or near power lines.
- Operate the crane slowly with the utmost care and attention.

Voltage	Required stand-off distance
to 50kV	10 ft. (3 meters)
over 50kV to 200kV	15 ft. (4.5 meters)
over 200kV to 250kV	25 ft. (7.6 meters)
over 250kV to 750kV	35 ft. (10.6 meters)
over 750kV to 1,000kV	45 ft. (13.7 meters)



If the truck or crane become electrified, keep calm, and follow the instructions below:

- Contact the power company to cut off the power and obtain instructions for emergency action.
- To prevent secondary accidents, direct all personnel around the equipment to evacuate the site. Strictly control the site to keep everyone away from the electrified truck or crane.
- If working personnel are left on the truck (truck deck) they must ensure that the landing place is safe, and then jump off the truck as far as possible. It is very dangerous to dismount from the truck while in contact with metal truck or crane parts.

⚠ Be Cautious about High-Power Radio Waves

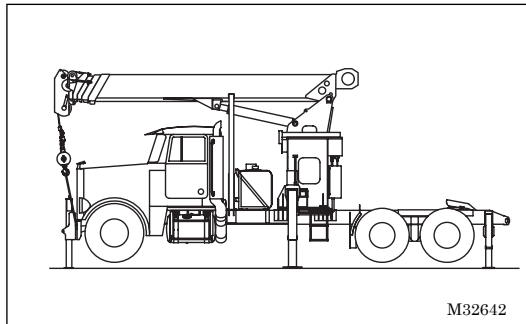
When the crane is operated near a high-power television or radio transmitter, an induced current may flow through the crane structure, causing electric shock or burns. Also, the electronic equipment may be damaged.

Wear rubber gloves to prevent electric shock or burns, and ground the hook block to discharge electricity before starting rigging work.

After Operation

▲ Stow the Crane After an Operation is Completed

It is dangerous to leave the crane in the working condition. After an operation is completed, be sure to stow the crane.



▲ Disengage the PTO

If the PTO remains ON, the crane may be activated when any of the control levers are accidentally moved.

After stowing the crane, be sure to disengage the PTO.

(With a battery-driven crane, turn OFF the power supply.)

Rules for Traveling on Roads

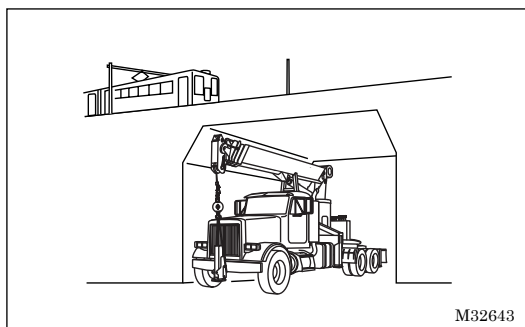
▲ Set the Crane in the Traveling Configuration

A swaying hook block or boom, or extended outrigger poses a hazard during traveling. Be sure to stow the hook and boom in their proper positions and secure the outrigger beams with the lock pins. Before traveling, set the crane in the traveling configuration.

▲ Pay Attention to Overhead Obstacles

Pay attention to overhead obstacles in particular, electric transmission wires. During travel, check the overhead clearance between the crane and any obstacles.

In particular, when traveling under overhead wires or under a bridge girder or tunnel entrance, make sure that your truck will not collide with any part of these structures.



Rules for Inspection and Maintenance

▲ Perform Inspection and Maintenance Regularly

Failure to inspect or service the crane at regular intervals prevents faults from being detected at early stages, which may result in accidents. Be sure to perform inspection and maintenance at specified intervals to prevent possible problems.

▲ Be Familiar with Correct Procedures before Starting Inspection and Maintenance Work

Improper inspection or maintenance damages the equipment, and also may result in injury or death. Before starting inspection or maintenance work, thoroughly read the "INSPECTION AND MAINTENANCE" section of the manual. Do not attempt to start inspection or maintenance work until you are sufficiently familiar with the correct procedures.

▲ Do Not Adjust or Disassemble the Hydraulic Equipment

The hydraulic equipment, such as the safety valve, has been inspected and adjusted before shipment from the factory.

Disassembling or improperly adjusting the hydraulic equipment affects the safety and functional features of the crane, which may cause serious accidents.

If the hydraulic equipment must be disassembled or re-adjusted, contact the nearest TADANO distributor or dealer.

▲ Do Not Modify the Crane

Making modifications that may affect the performance, safety, and strength of the crane may damage the equipment, or cause an accident.

Do not attempt to modify any part of the crane.

▲ Ensure Sufficient Ventilation

Performing inspection or maintenance work in a confined place without sufficient ventilation may result in toxic poisoning.

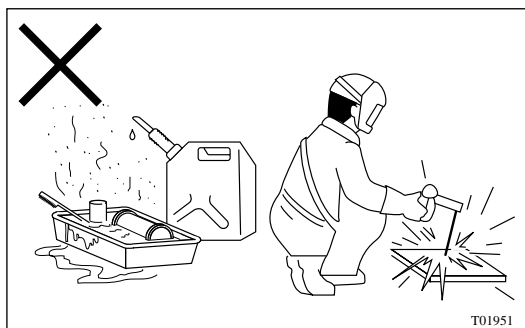
Exercise caution, particularly when near exhaust gas, or handling fuel, wash oil, or paint.

In particular, when starting the engine in a confined place, provide proper ventilation. Extend the exhaust pipe to vent the exhaust gas outdoors. Open doors and windows to allow fresh air circulation.

⚠ Fire Prevention

Inspection and maintenance work involves inflammable substances such as fuel and battery fluid. To prevent the risk of fire during inspection and maintenance work, observe the following instructions:

- To clean the crane parts, use non-flammable washing liquid.
- Keep fuel and oils away from all sources of flames or sparks.
- Do not allow anyone to smoke. Remove all sources of flames or sparks.
- Always keep a fire extinguisher ready.
- To inspect fuel, oils, and battery fluid, use an explosion-proof light.
- During grinding or welding work, keep inflammable substances away from sparks.



⚠ Provide Sufficient Illumination

Performing inspection or maintenance work in a poorly-illuminated place may result in injury. Before starting work, provide sufficient illumination.

Do not use matches or lighters to illuminate the work site. If the battery gas catches fire, an explosion may occur.

To inspect fuel or battery fluid, be sure to use an explosion-proof light.

⚠ Clean the Crane before Inspection or Maintenance

Dirt or debris on the equipment not only hinders easy detection of defective components, but also can be trapped in the components during inspection or maintenance work. Also, dust or mud may damage your eyes or cause you to slip, resulting in injury.

Before starting inspection or maintenance work, clean the crane and remove debris to ensure safe operation.

⚠ Precautions for Washing the Machine

Wet footing on the truck deck may cause you to slip and fall. To wash the equipment wear non-slip shoes.

When steam is used to wash the truck or crane, the high-pressure water may cut your skin or flying mud may damage your eyes. Be sure to wear proper protective gear when washing the machine.

If the electrical components become wet, they may be short-circuited and damaged. Be careful not to splash water over the electrical components.

▲ Inspect and Maintain the Crane on Level Ground

When the truck is parked on a slope, it is difficult to inspect the crane correctly. Also, if the truck is not properly parked, it may start moving, causing a hazard for working personnel.

During inspection or maintenance work, park the truck on firm level ground. Be sure to activate the parking brake and chock the tires.

▲ Keep the Work Site Clean and Tidy

Performing inspection or maintenance work in an untidy place may result in injury or an accident. Remove all obstacles before starting work.

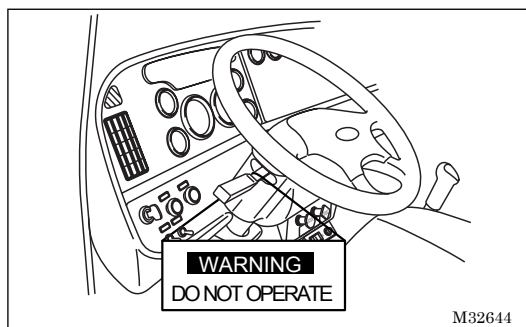
To ensure safe work, put away all greases, oils, paints and debris to make the work site clean and tidy.

▲ Labeling for Inspection or Maintenance Work

Allowing any unauthorized person to start the engine during inspection or maintenance work may damage the truck or result in injury or death.

Before starting inspection or maintenance work, remove the starter key and post a warning sign on the driver's seat or cab door to indicate that the equipment is being inspected.

Also, post warning signs around the truck to prevent unauthorized people from entering the work site.



▲ Start Inspection or Maintenance after the Crane Has Cooled Down

Immediately after the crane is operated, the components are hot. If you accidentally touch hot parts, you may be burned. These components include the engine, muffler, engine cooling water, radiators, hydraulic oil, speed reducers, hydraulic equipment, and piping.

Before starting inspection or maintenance work, allow these components and areas to cool down so that they can be touched by hand.

⚠ Pay Attention to High-Pressure Oils

If high-pressure fuel or hydraulic oil cuts into your skin or eyes, it may result in serious injury. To avoid this risk, observe the following instructions:

- Before disconnecting piping, be sure to release the internal pressure.
- Leakage of high-pressure oil may be invisible. To detect oil leakage, wear protective goggles and gloves, and place a piece of cardboard or wood over the part where oil leakage is expected. It is dangerous to use bare hands to detect oil leakage.
- If high-pressure oil accidentally cuts into the skin or eyes, obtain medical attention immediately.

⚠ Stop the Engine Before Inspection or Maintenance

It is dangerous to perform inspection or maintenance work while the engine is running. Unless otherwise specified, be sure to stop the engine before starting inspection or maintenance work.

⚠ Assign Two Persons for Inspection or Maintenance with the Engine Running

If it is absolutely necessary to perform maintenance or inspection work with the engine running, assign at least two persons: one person seated in the driver's cab so that the engine can be stopped whenever necessary, and the other(s) to perform the inspection or maintenance work. These persons must have sufficient communication to ensure safety.

While the engine is running, do not open the hood or touch the engine.

⚠ Use Proper Tools

Using improper tools for inspection or maintenance work not only reduces the work efficiency, but also damages components and may result in injuries.

Do not use damaged tools for inspection or maintenance. Use proper tools depending on the purpose.

⚠ Pay Attention to Overhead Objects and Footing

If your attention is diverted or you lose your footing, you may knock your head against the hook or boom, or slip and fall off the machine.

Always pay attention to overhead objects and your footing. Do not step on the boom, outriggers or stabilizers. When walking on the truck deck, be careful not to slip and fall.

Wear a safety belt or other protective gear, or use a stepladder, depending on the work condition.

⚠️ Precautions for Working Under the Truck

To perform inspection or maintenance work under the truck with the jack cylinders extended, be sure to insert a hard block or cribbing under the bottom of the outriggers to support the lifted truck body securely.

Never work under the machine when the truck body is not securely supported. If the truck body drops, the working personnel underneath will be crushed.

⚠️ Stay Away from Moving Parts

If the truck and/or crane is inadvertently operated or working personnel accidentally touch a moving part, they may be caught in the equipment, resulting in a serious accident.

If it is absolutely necessary to perform inspection or maintenance work with the truck or crane in operation, do not get close to moving parts such as the boom, boom elevating cylinder, winch, propeller shaft, etc.

If you must work near moving parts, exercise thorough attention to keep your hands and clothing away from moving or rotating parts.

⚠️ Do Not Drop Tools into an Inspection Hole

When working through an inspection opening while facing down, be careful not to drop a tool or any other object into the opening. Dropping objects can damage the machine and cause malfunctions.

Carry only necessary tools for inspection in your pockets.

If you carelessly drop an object or tool, be sure to remove it.

⚠️ Be Cautious about Dust

Be careful not to inhale any dust during inspection or maintenance work. If the machine is covered with dust, remove dust with a vacuum cleaner before starting work. Do not use compressed air to remove dust.

⚠️ Disconnect the Battery Cable before Inspection or Maintenance of the Electrical System

Performing inspection or maintenance on the electrical system without disconnecting the battery cable may result in short circuits, damaging the electrical components.

Before starting inspection or maintenance work on the electrical system, be sure to disconnect the negative terminal (ground) cable from the battery.

⚠️ Handle Wire Rope Carefully

Improperly handling wire rope results in reduced service life, and causes rope breakage. Handle wire rope properly and carefully, according to the instructions in this manual.

▲ Use Genuine Parts Only

Using non-genuine parts may damage the safety and functional features of the crane.
To replace parts, such as filters, use only specified genuine items.

▲ Use Specified Oils

When refilling or replacing oils or greases, using unspecified brands or mixing different brands changes their properties due to chemical reactions. This may affect performance.

To refill or replace oils or greases, only use the recommended brands or grades of oils or greases.
To use oils or greases of a brand other than those specified, drain the existing oil or grease completely, and then refill the new oils or greases.

▲ Verification after Maintenance

Failure to check operation of the truck and crane equipment after maintenance prevents oil leakage or malfunction from being detected at an early stage, which may cause an accident.

After maintenance, be sure to check the serviced parts or systems for abnormal operation, oil leakage, loose bolts, and any other problems.

Remember that all “maintenance work” should include positive verification of correct operation.

▲ Waste Disposal

Disposing of wastes, such as oils and used filters, thoughtlessly will result in environmental contamination.

When draining waste oils from the machine, use a proper vessel. Never discharge waste oils onto the ground or into rivers or marshes.

To dispose of oils, fuels, cooling water, brake fluid, solvents, filters, batteries, or any other harmful substances, contact an authorized industrial waste disposer.

Warning Decals

Several warning decals are affixed to your crane and in the truck cab. These decals include important warnings and cautions to ensure safety. This section reviews these warnings and cautions, and shows the location of the decals. The instructions given on these decals are essential to prevent accidents. Be sure to understand them thoroughly.

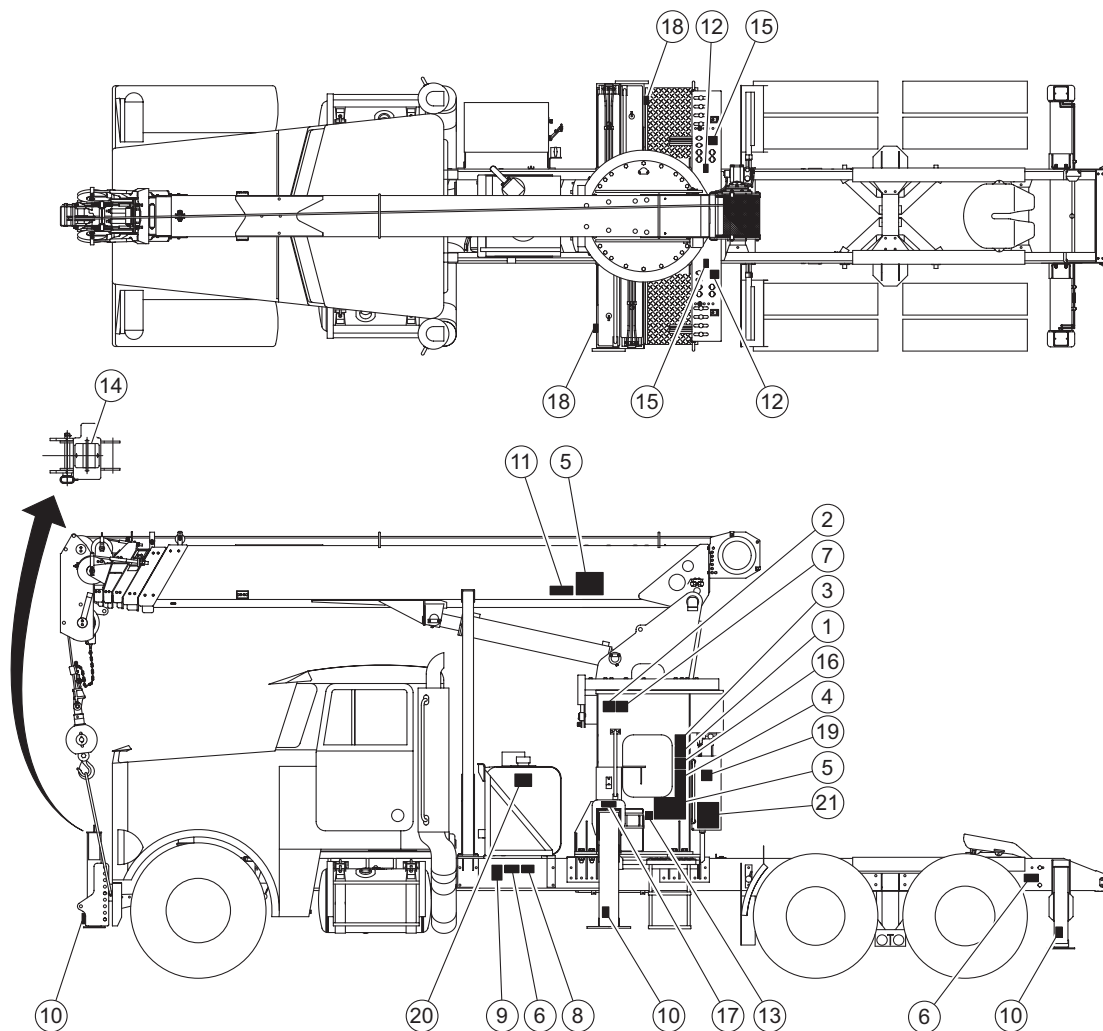
Make sure that the warning decals are not damaged or covered with grime. If words or pictures are illegible or unclear, clean them.

If any decal is soiled or missing, replace it with a new one.

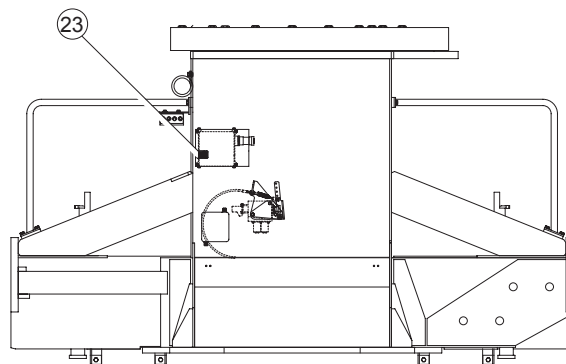
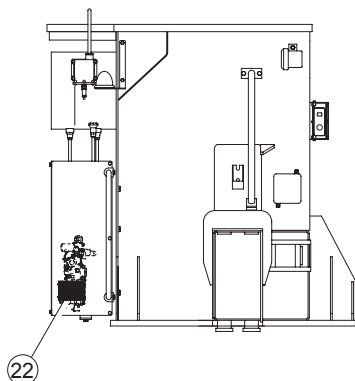
New decals are available from your nearest TADANO distributor or dealer.

Warning Decals- Location and Contents

◆ 22. and 23. are provided for a crane with the radio control specification.



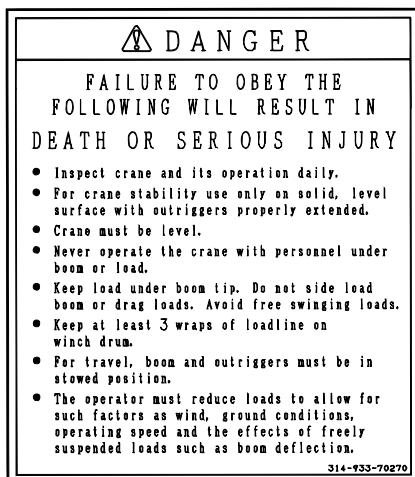
M32031-3



M32032-2

- | | |
|---|--|
| 1. Danger/Crane operation (2 parts) | 13. Danger/Side loading |
| 2. Danger/Crane operation (2 parts) | 14. Warning/Crushing hazard (1 part) |
| 3. Danger/Crane operation (2 parts) | 15. Warning/Outrigger and stabilizer operation (2 parts) |
| 4. Danger/Crane operation (2 parts) | 16. Warning/AMA operation (2 parts) |
| 5. Danger/Electrocution hazard (4 parts) | 17. Warning/Outrigger operation (2 parts) |
| 6. Danger/Electrocution hazard (4 parts) | 18. Warning/Hand (2 parts) |
| 7. Danger/Crane operation (2 parts) | 19. Warning/Owner registration (1 part) |
| 8. Danger/Never ride on hook block (2 parts) | 20. Caution/Hydraulic fluid (1 part) |
| 9. Danger/Driveline hazard (2 parts) | 21. Hand signals (2 parts) |
| 10. Danger/Foot (5 parts) | 22. Caution/Emergency hook stowing (1 part) |
| 11. Danger/Boom in motion (2 parts) | 23. Caution/Do not fail to cap (1 part) |
| 12. Danger/Outrigger and stabilizer operation (2 parts) | |

1. Danger/Crane operation



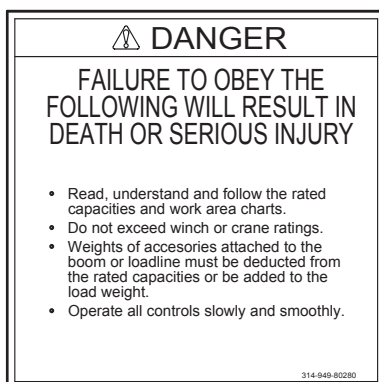
314-933-70270-0

2. Danger/Crane operation



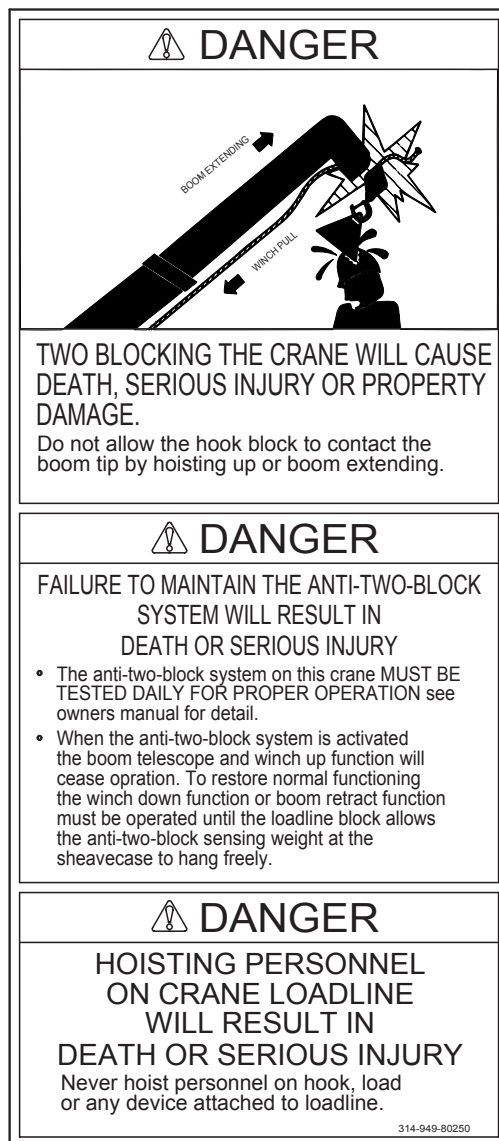
314-949-80230-0

3. Danger/Crane operation



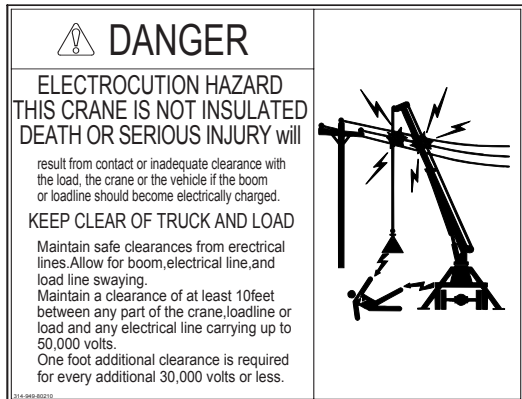
314-949-80280-0

4. Danger/Crane operation



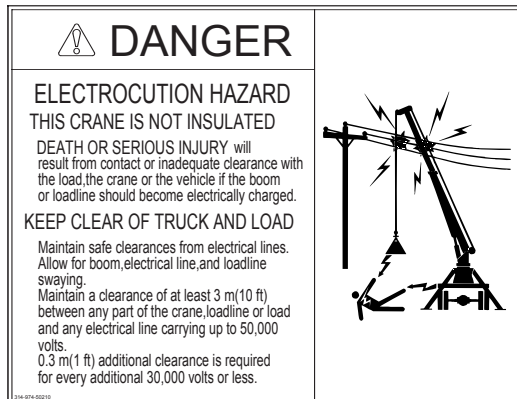
314-949-80250-0

5. Danger/Electrocution hazard
(Applicable serial number up to EX0326)



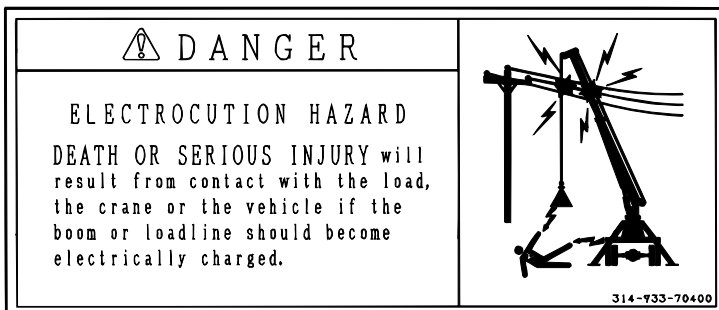
314-949-80210-0

5. Danger/Electrocution hazard
(Applicable serial number EX0327 or later)



314-974-50210-0

6. Danger/Electrocution hazard



314-933-70400

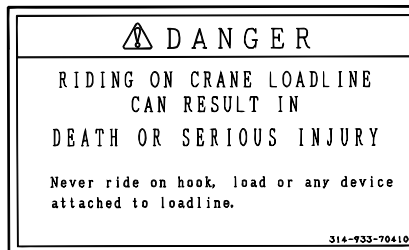
314-933-70400-0

7. Danger/Crane operation



314-949-80220-0

8. Danger/Never ride on hook block



314-933-70410

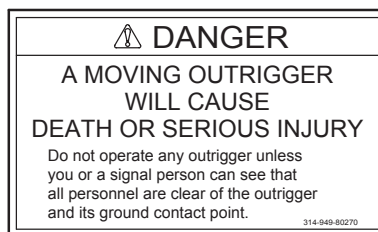
314-933-70410-0

9. Danger/Driveline hazard



314-933-70420-0

12. Danger/Outrigger and stabilizer operation



314-949-80270-0

13. Danger/Side loading



370-022-27020-0

10. Danger/Foot



314-916-20250-0

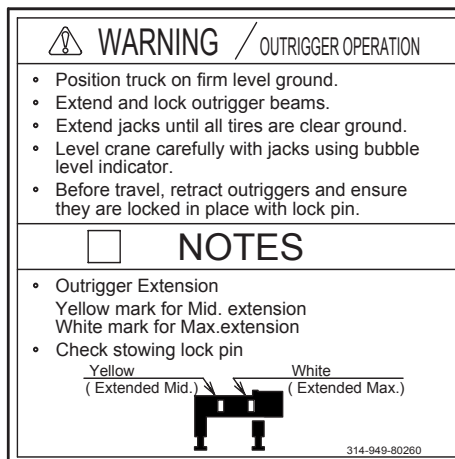
14. Warning/Crushing hazard

(Applicable serial number EX0327 or later)



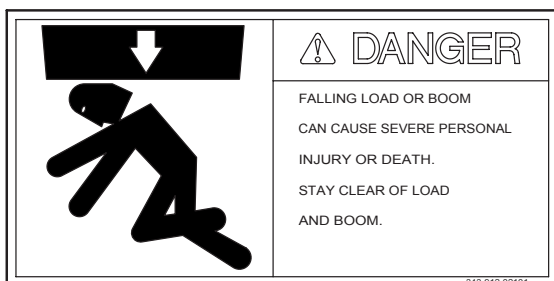
343-912-02180-0

15. Warning/Outrigger and stabilizer operation




314-949-80260-0

11. Danger/Boom in motion



343-912-02101-0

16. Warning/AMA operation

 WARNING/AMA
<ul style="list-style-type: none"> • THE AMA SYSTEM IS INTENDED TO BE USED AS AN AID TO PREVENT MOST OVERLOAD CONDITIONS. DO NOT USE THE AMA SYSTEM AS A SUBSTITUTE FOR SAFE OPERATING PRACTICES AS OUTLINED IN THE OPERATOR'S MANUAL, NOR AS A SUBSTITUTE FOR KNOWLEDGE OF THE WEIGHT OF THE LOAD TO BE LIFTED, THE LOAD RADIUS OR THE RATED LIFTING CAPACITY. • DO NOT EXPECT THE AMA SYSTEM TO DETECT ALL POSSIBLE OVERLOAD CONDITIONS. • Read the operator's manual thoroughly and perform the preoperational inspection. • Set the crane level on firm even ground using the bubble indicator. • When an overload condition is reached, the winch-up, lift-down and boom-extend functions will cease to operate. • To reset AMA system, relieve the overload condition by <ul style="list-style-type: none"> • winching the load down. • retracting the boom. • lifting the boom up. • Do not operate the controls abruptly, the load can swing and cause an accident.
<small>314-949-80240</small>

314-949-80240-0

19. Warning/Owner registration

 WARNING
<ul style="list-style-type: none"> • Subsequent owner please register your name as the new owner of this crane with TADANO AMERICA CORPORATION. So that you can be kept abreast of important information. • If any operational decals or charts on this crane are removed or defaced, consult the owners manual for immediate replacement. • If the owners manual is not with the crane, order one from the below address.
<p>TADANO AMERICA CORPORATION 333 Northpark Central Dr., Ste. Z, Houston TX 77073-6088 U.S.A. Telephone (281) 869-0030 Fax (281) 869-0040 http://www.tadanoamerica.com/</p>
<small>314-933-70311</small>


314-933-70311-0

17. Warning/Outrigger operation

	 WARNING
	<p>KEEP CLEAR OF MOVING OUTRIGGER TO PREVENT BODILY INJURY.</p>

343-912-02090
 343-912-02090-0

20. Caution/Hydraulic fluid

<p>NOTICE HYDRAULIC FLUID ONLY</p>
 CAUTION
<p>READ OPERATORS MANUAL BEFORE SERVICING. DO NOT FAIL TO BREATHE OUT AIR FROM THE HYDRAULIC PUMP. EVERY TIME HYDRAULIC FLUID IS REFILLED OR THE PUMP IS REPLACED. ALL CYLINDERS MUST BE RETRACTED WHEN CHECKING FLUID LEVEL. TEMPERATURE CONVERSION FOR LEVEL GAUGE 40°C (104°F), 20°C(68°F), 0°C(32°F)</p>

343-941-92040
 343-941-92040-0







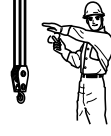











18. Warning/Hand

 WARNING

<p>Pinch Point will cause injury KEEP HANDS CLEAR</p>
<small>314-916-20240</small>


314-916-20240-0

21. Hand signals

 HOIST	 LOWER	 USE MAIN HOIST	 USE WHIP LINE (Auxiliary Hoist)
 RAISE BOOM	 LOWER BOOM	 MOVE SLOWLY	 RAISE THE BOOM AND LOWER THE LOAD
 LOWER THE BOOM AND RAISE THE LOAD	 SWING	 STOP	 EMERGENCY STOP
 EXTEND BOOM	 DOG EVERYTHING	 TRAVEL	 RETRACT BOOM
 EXTEND BOOM (ONE HAND)	 RETRACT BOOM (ONE HAND)	HAND SIGNALS	

343-912-01300-0

22. Caution/Emergency hook stowing

 **CAUTION / Emergency hook stowing**

- ① Remove red cap nut. Loosen lock nut. Fasten screw down until snug.
- ② Restore crane to traveling configuration.
- ③ Have crane checked and repaired.

These are temporary steps in case of emergency. For details read operation manual.

314-916-20260

314-916-20260-0

23. Caution/Do not fail to cap

DO NOT FAIL TO CAP



313-945-80620

313-945-80620-0

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1. INTRODUCTION



1-1 Preface

This manual has been edited to ensure safe and proper operation, inspection and maintenance of the cranes of TM-1800-1 series.

For the operation, inspection and maintenance of the radio control device, refer to the Operation and Maintenance Manual for Radio-control System.

For the inflation pressure of the tires, see the decals affixed in the carrier driver's cab.

Note that the illustrations in this manual may differ slightly from your machine. To facilitate explanation, some illustrations show the machine's components with their covers and guards removed.

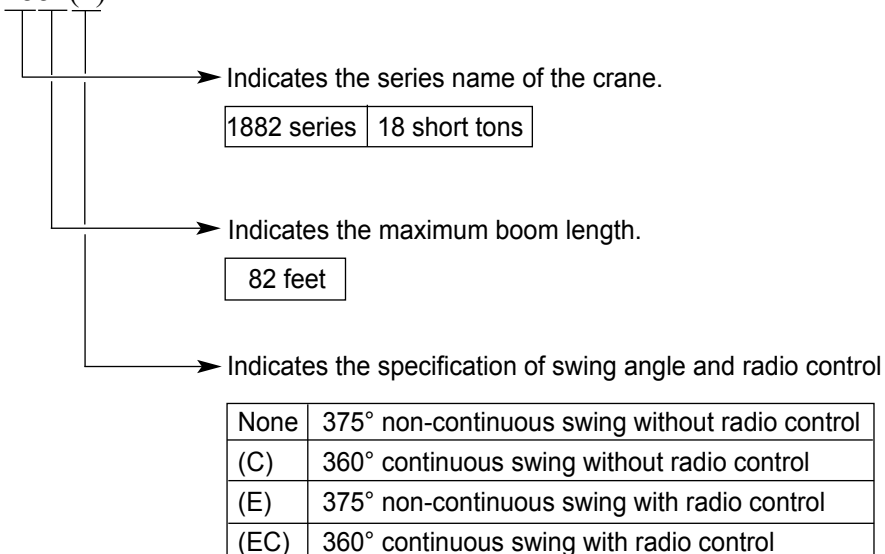
Note that, for product improvement, your machine may incorporate some modifications which are not covered in this manual.

If you transfer the machine to someone, be sure to include this manual too, for the next operators.

If you have any questions about your machine or the description in this manual, contact your nearest TADANO distributor or dealer.

1-2 Model Name and Specifications

TM-1882(*)



Specification No.	Specification
TM-1800-1-■05	375° non-continuous swing
TM-1800-1-■15	360° continuous swing
TM-1800-1-1■5	Without radio control
TM-1800-1-3■5	With radio control

■: Variable number (The number is different according to the equipped options.)

1-3 Servicing and Ordering Parts

If a failure occurs with your crane, or when ordering spare parts, contact an authorized TADANO distributor or dealer, and specify the following information:

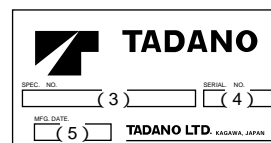
Boom Nameplate

- (1) Unit number
- (2) Lot number



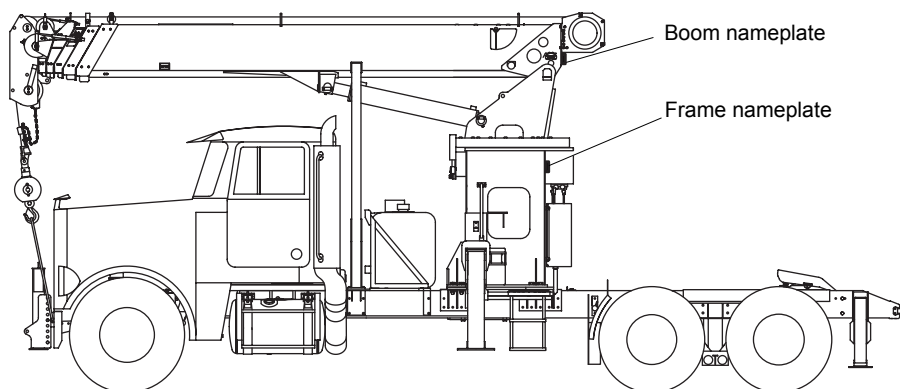
Frame Nameplate

- (3) Unit number
- (4) Serial number
- (5) Year and month of production



M00415

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- (6) Details on machine failure, or the number and quantity of required parts

1-4 Terminology

This section describes the meaning of some important terms used in this manual.

1. Load Radius

“Load radius” refers to the horizontal distance between the crane’s center of rotation and the center of the lifted load.

2. Lifting Height

“Lifting height” refers to the vertical distance between the ground and the bottom of the hook block when the hook block is positioned at its upper limit for each load radius.

3. Maximum Lifting Height

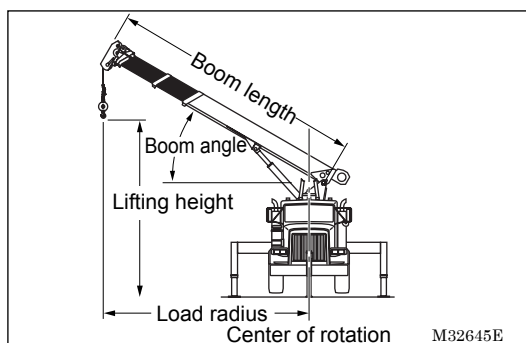
“Maximum lifting height” refers to the maximum allowable lifting height.

4. Boom Length

“Boom length” refers to the distance between the pivot pin at the bottom of the boom and the center of the sheave at the boom head.

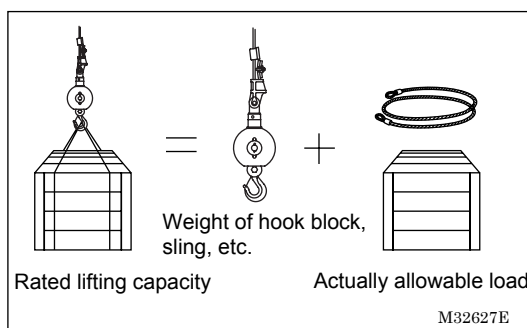
5. Boom Angle

“Boom angle” refers to the angle between the centerline of the boom and the horizontal.



6. Rated Lifting Capacity

“Rated lifting capacity” is based on the crane strength and the carrier stability, and varies depending on the boom length and the load radius. Each value of the rated lifting capacity includes the weight of the hook block, sling, etc.



7. Maximum Lifting Load

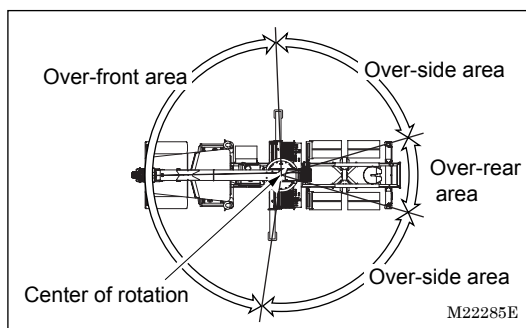
“Maximum lifting load” refers to the maximum allowable value of the rated lifting capacity.

8. Over-front Area, Over-rear Area, Over-side Area

“Over-front area” refers to the forward working area of the crane, that is defined with the lines connecting the crane’s center of rotation and the center of the outrigger jack floats.

“Over-rear area” refers to the rear working area of the crane, that is defined with the lines connecting the crane’s center of rotation and the center of the rear stabilizers.

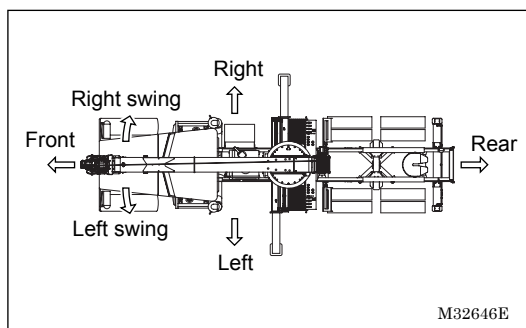
“Over-side area” refers to the working areas other than the over-front and over-rear areas.



9. Front, Rear, Right, Left

“Front”, “rear”, “right” and “left” refer to the directions viewed from the driver’s seat. These directions are constant, regardless of the swing position of the upper revolving structure.

Regarding the boom swing direction, a clockwise turn is referred to as “right swing”, and a counter-clockwise turn is referred to as “left swing”, when viewed from the above the machine.



10. Unloaded

This refers to the condition where the hook is lifted without a load.

11. Raising a Load Just Clear of Ground

This phrase expresses the operation of hoisting up a load a few inches above the ground and holding it at that position.

12. Outrigger Extension Width

“Outrigger extension width” refers to the horizontal distance between the right and left jack floats when the outriggers are extended.

(1) Maximum outrigger extension width (L1)

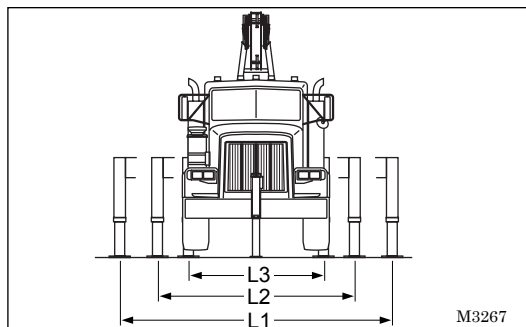
Outrigger extension width when the outriggers are extended to the maximum width.

(2) Middle outrigger extension width (L2)

Outrigger extension width when outriggers are extended to the specified intermediate position.

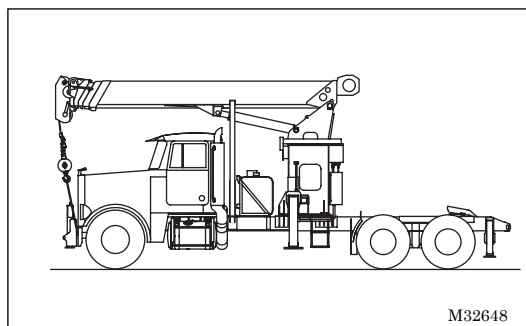
(3) Minimum outrigger extension width (L3)

Outrigger extension width when the outriggers are extended to the specified minimum width.



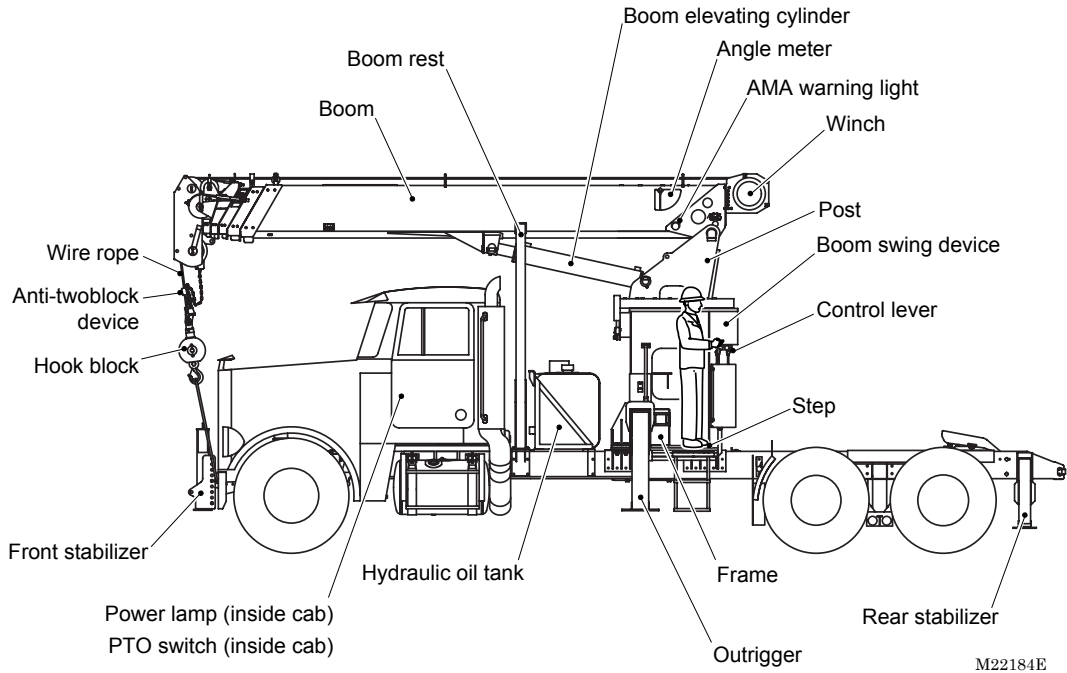
13. Back-of-cab Mounting

This refers to mounting the crane between the cab and the truck body.

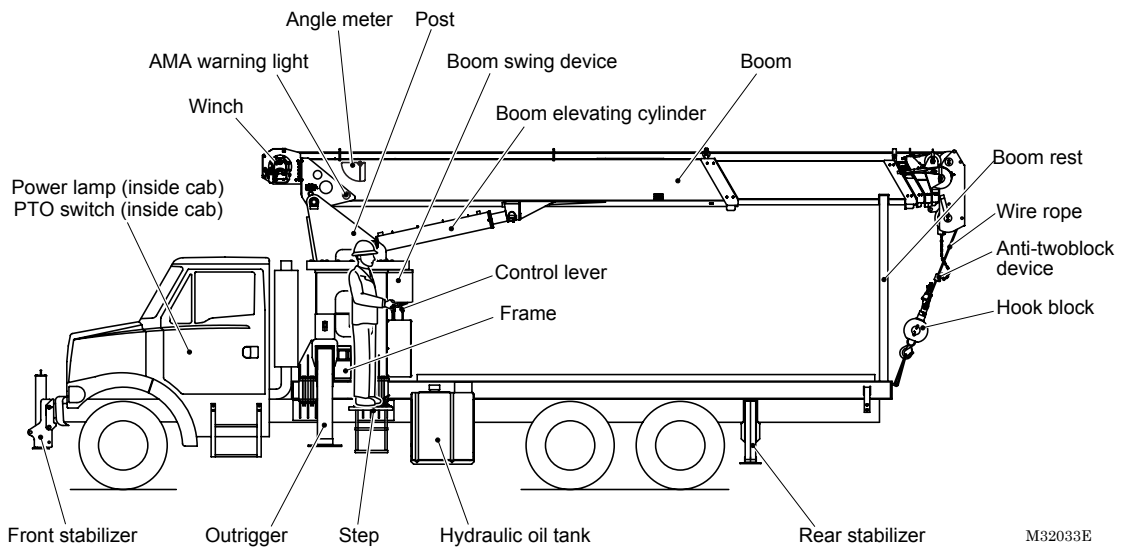


1-5 Components

For tractor mouting



For straight truck mouting



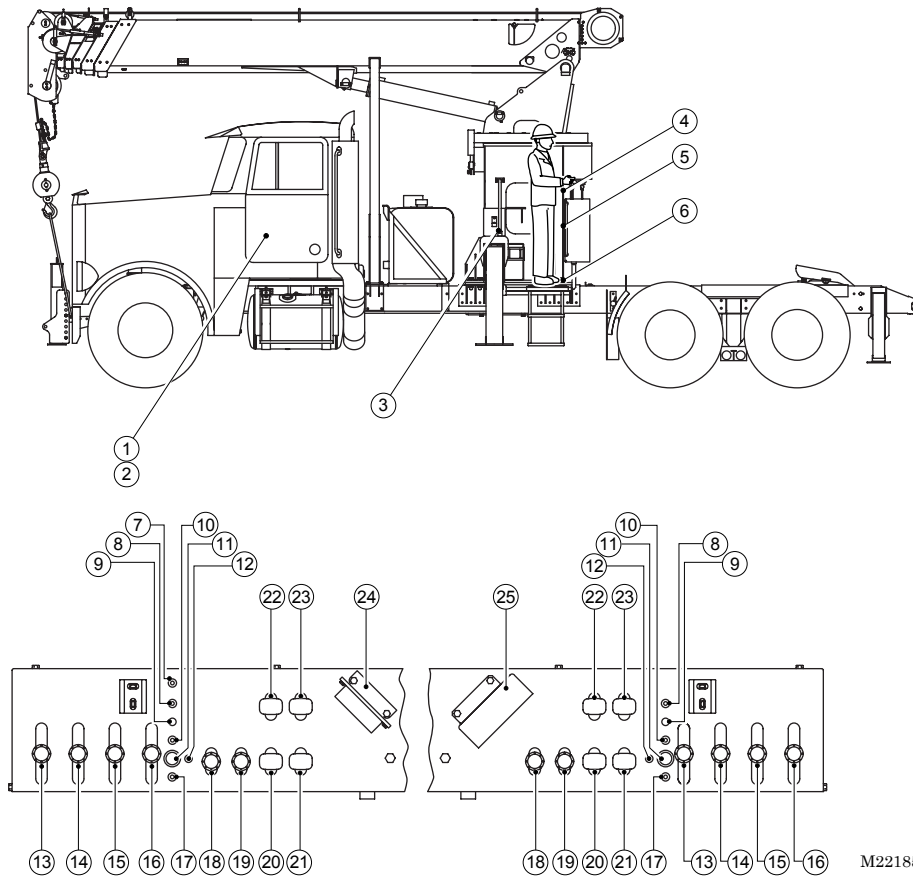
MEMO

2. OPERATION



2-1 Layout of the Controls

- ◆ For the radio control transmitter, refer to the Operation and Maintenance Manual for Radio-control System. (For the model with radio control.)



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- | | | | |
|---------------------------------------|---------------|---|--------|
| 1. PTO switch | •P. 29 | 15. Winch lever | •P. 45 |
| 2. Power lamp | •P. 28, 29 | 16. Boom elevating lever | •P. 47 |
| 3. Slide lock pin | •P. 34 | 17. Horn switch | •P. 27 |
| 4. AMA device alarm buzzer | •P. 20 | 18. Front stabilizer RET./EXT. lever | •P. 34 |
| 5. Anti-twoblock device alarm buzzer | •P. 26 | 19. Outrigger RET./EXT. lever | •P. 34 |
| 6. Accelerator pedal | •P. 42 | 20. Outrigger extension/jack selector lever (right) | •P. 34 |
| 7. Display alteration switch | •P. 20 | 21. Outrigger extension/jack selector lever (left) | •P. 34 |
| 8. Override switch | •P.20, 48, 53 | 22. Rear stabilizer jack lever (right) | •P. 34 |
| 9. High-speed hoisting indicator lamp | •P. 45 | 23. Rear stabilizer jack lever (left) | •P. 34 |
| 10. High-speed hoisting switch | •P. 45 | 24. AMA display window | •P. 20 |
| 11. Stop switch | •P. 28 | 25. AMA main body | •P. 20 |
| 12. Stop lamp | •P. 28 | | |
| 13. Boom swing lever | •P. 49 | | |
| 14. Boom telescoping lever | •P. 43 | | |

2-2 Crane Operating Procedure

⚠ WARNING

⚠ This section summarizes the crane operating procedures from the start of an operation to the end. For detailed description on individual controls, refer to the corresponding pages in this manual. Do not attempt to operate the crane until you become familiar with the correct operating procedure.

(1) Preparatory Steps

◆ For details on each procedure, see the chapter indicated in " ".

1. Perform pre-operational inspection.

"3-2 Pre-Operational and Periodic Inspection"

2. Make sure that the following control levers are set in the specified position.

Boom telescoping lever, winch lever, boom elevating lever,

boom swing lever, jack levers:Neutral position

PTO switch:OFF

3. Start the engine.

◆ Then engine cannot be started while any of the stop switches is pressed in. If the engine cannot be started, check if any of the switches is pressed in.

4. Engage the PTO.

"2-6 Operating the PTO and Warming Up the Machine"

5. Warm up the machine. While it is warming up, check that all meter and monitor displays are normal and that the machine is not making any abnormal sounds.

"2-6 Operating the PTO and Warming Up the Machine"

6. Extend the outriggers to the maximum width and stabilizers, and level the crane.

"2-7 Outriggers and Stabilizers"

7. Take out the hook block.

"2-13 (1) Taking Out the Hook Block"

8. After the engine is started, perform pre-operational inspection.

"3-2 Pre-Operational and Periodic Inspection"

9. Perform AMA pre-operational inspection.

"2-4 AMA"

(2) Operation

1. Operate the crane while making sure that it is not overloaded, referring to the rated lifting capacity table.

"2-3 How to Read the Performance Data Table"

"2-4 AMA"

"2-5 Other Safety Devices"

"2-8 Acceleration"

"2-9 Telescoping the Boom"

"2-10 Hoisting"

"2-11 Elevating the Boom"

"2-12 Swinging the Boom"

"2-14 Reeving Wire Rope"

(3) After Operation

1. Stow the boom in the specified position.

"2-13 (2) Setting the Machine Ready for Travel"

2. Stow the hook.

"2-13 (2) Setting the Machine Ready for Travel"

3. Stow the outriggers and stabilizers.

"2-7 Outriggers and Stabilizers"

4. Make sure that the slide lock pins fix the outriggers.

"2-7 Outriggers and Stabilizers"

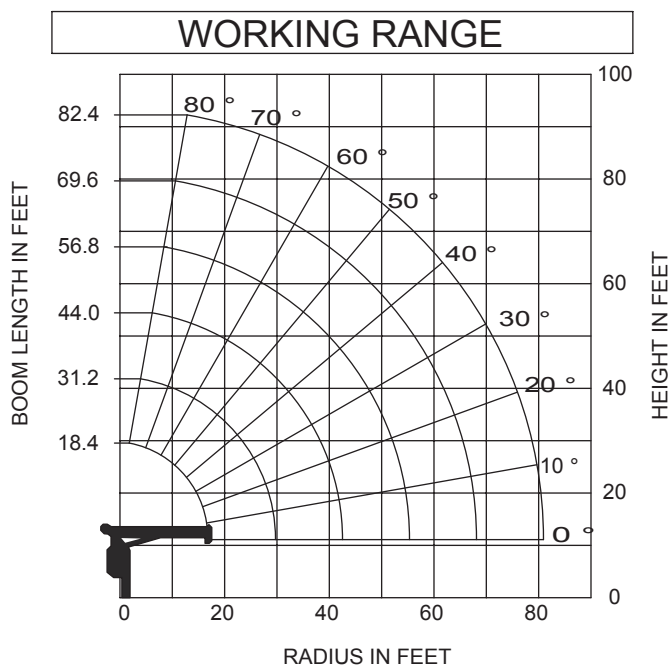
5. Disengage the PTO.

"2-6 Operating the PTO and Warming Up the Machine"

2-3 How to Read the Performance Data Table

(1) How to Read the Load Radius /Lifting Height Chart

The “load radius /lifting height” chart shows the relation between the load radius and the lifting height for each boom length and boom angle.

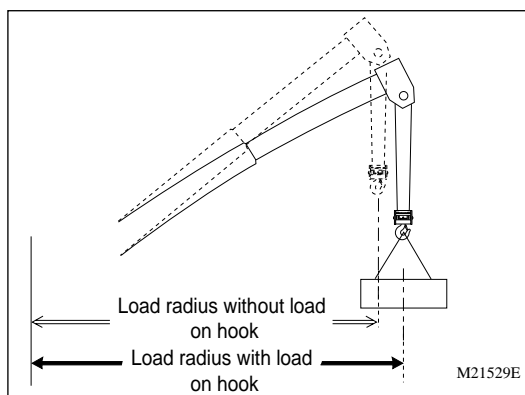
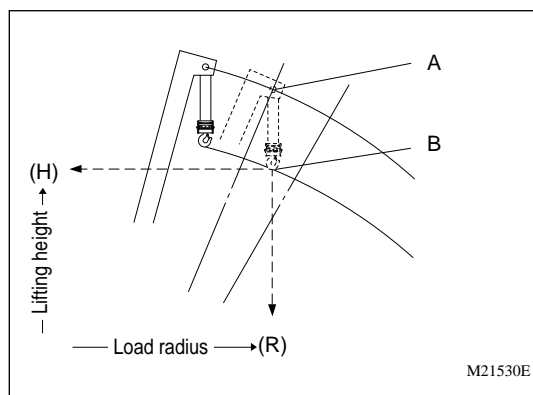


□ NOTE: Chart does not include boom deflection.

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◆ While points A and B in the figure are in the same load radius, point A denotes the boom angle, and point B the lifting height.

◆ The working range chart does not include the influence of boom deflection. When a load is lifted, the boom deflects, increasing the load radius.



(2) How to Read the Rated Lifting Capacity Table

⚠ WARNING

⚠ The values shown in the rated lifting capacities tables are based on ideal conditions where the crane is set level on a firm surface, there is no wind or side load, and the load is not swinging. When operating the crane under these conditions is not possible, reduce the load as necessary according to the actual operating conditions.

⚠ The rated lifting capacity tables show the performance of a leveled crane with the outriggers and stabilizers extended. It is based on the crane strength and the carrier stability. The rated lifting capacity varies depending on the boom length and the load radius. Also, this table is based on the actual load radius that includes the influence of boom deflection due to a load being lifted.

◆ The rated lifting capacity table lists the maximum allowable load for each load radius by the boom length.

Referring to the rated lifting capacity table, read the rated lifting capacity corresponding to the boom length and load radius (boom angle) of your crane.

(1) Select the rated lifting capacity table corresponding to the boom length of your crane.

◆ The rated lifting capacity tables show the performance of a leveled crane with the outriggers and stabilizers extended. The rated lifting capacity includes the weight of the rigging device and the hook block.

◆ The values in the shaded sections of the tables are based on the crane strength.

◆ If the boom length of your crane exceeds the length listed in this table even a little, select the table corresponding to the next longer boom.

◆ If the load radius is between the two values listed in this table, take the row corresponding to the longer load radius in the table.

(2) Read the rated lifting capacity corresponding to the actual load radius.

c TM-1882 RATED LIFTING CAPACITIES (lbs.)


Load Radius (ft.)	18.4ft. BOOM			31.2ft. BOOM			44ft. BOOM		56.8ft. BOOM		69.6ft. BOOM		82.4ft. BOOM						
	Loaded Boom Angle	Outriggers Extended			Loaded Boom Angle	Outriggers Extended			Loaded Boom Angle	Outriggers Extended		Loaded Boom Angle	Outriggers Extended		Loaded Boom Angle	Outriggers Extended			
		Max.	Mid.	Min.		Max.	Mid.	Min.		Max.	Mid.		Max.	Mid.		Max.	Mid.	Max.	
5	75°	36,000	30,000	22,000															
8	64°	23,000	23,000	15,200	76°	17,450	17,450	13,200											
10	57°	19,350	19,350	10,100	73°	17,450	17,450	8,750	79°	17,450	17,450								
12	48°	16,550	16,550	7,400	69°	15,600	15,600	6,350	76°	14,650	14,650	80°	9,050	9,050					
14	38°	14,550	14,550	5,650	64°	13,650	13,650	4,800	73°	12,750	12,750	78°	9,050	9,050					
16	24°	13,000	12,700	4,500	60°	12,300	11,600	3,750	70°	11,500	11,000	76°	9,050	9,050	80°	9,050			
20					51°	10,000	7,700	2,350	65°	9,400	7,700	72°	8,450	7,700	77°	7,300	79°	4,200	
25					36°	8,100	4,950	1,300	57°	7,600	4,950	66°	6,900	4,950	72°	6,000	76°	4,200	
30									48°	6,250	3,350	61°	5,650	3,350	68°	5,100	73°	4,200	
35									38°	5,050	2,400	54°	4,800	2,400	63°	4,300	69°	3,800	
40									23°	3,800	1,650	47°	3,800	1,650	58°	3,700	65°	3,300	
45												39°	3,400	1,150	53°	3,150	61°	2,900	
50												29°	2,700	900	47°	2,750	57°	2,500	
55															41°	2,300	52°	2,150	
60															33°	2,000	47°	1,900	
65															22°	1,600	42°	1,600	
70																	35°	1,350	
75																	28°	1,200	
80																	14°	850	
	0°	8,400	8,400	4,050	0°	3,950	3,400	600	0°	1,850	1,300	0°	1,100	700	0°	600	0°	350	
		(16.89ft.)				(29.69ft.)				(42.48ft.)			(55.28ft.)			(68.07ft.)			(81.33ft.)


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◆ To ensure safe operation, use the AMA and the angle meter together, as described later.

2-4 AMA

WARNING

 This device is an aid to safe operation. When the crane is overloaded or boom angle lower restriction is activated, the device outputs alarm and halts crane operation (boom lowering, hoisting up, boom extending). However, it should not replace operating instructions and use of the rated lifting capacity table. Sole reliance upon the device can cause an accident. The operator must exercise due caution to assure safety. If an alarm is output and crane movement is halted, stop operation and operate the crane to the contrary side to avoid hazard.

 Before starting operation, perform the preoperational inspection of AMA according to the AMA preoperational inspection procedure.

 The AMA operates properly only when it is used exactly as instructed in this manual. If you do not follow the specified AMA and crane operating procedures, the crane could overturn or be damaged, causing a serious accident. Be sure to observe the following precautions for safe operation.

- Never perform any operation with AMA deactivated.
- Place the crane on firm and level ground with the outriggers and stabilizers extended. Adjust the crane so that it is level.
- When the limit moment decreases close to the working moment, precautionary alarm is output. Operate the crane carefully at a low speed.
- Do not raise the boom to raise the load clear of the ground. Doing so is dangerous because the crane will not stop automatically even when it is overloaded. Always use the winch to raise a load clear of the ground. Once the load has cleared the ground, stop hoisting and check for safety.

[NOTICE]

◆ If the PTO is engaged while the boom is in stowed configuration, boom angle lower restriction is activated. Precautionary alarm and limit alarm do not work properly in this condition.

(1) Safety Function

AMA is a safety device to warn an operator of overloaded condition which will cause overturning of or damage to the crane. The device calculates the working and limit moments which vary depending on the working condition, based on the signals from various sensors.

When the working moment approaches the limit moment, the device outputs alarm to warn the operator. When the working moment reaches the limit moment, it outputs alarm and halts crane movement (boom lowering, hoisting up, boom extending).

Precautionary Alarm

The precautionary alarm works when the limit moment decreases close to the actual load moment.

Limit Alarm

The limit alarm works when the limit moment decreases to the actual load moment. Crane movement is halted.

Boom Angle Lower Restriction Alarm

This unit confines the boom angle. When the boom is lowered to the specified angle, it outputs alarm and halts crane movement.

System Error Alarm

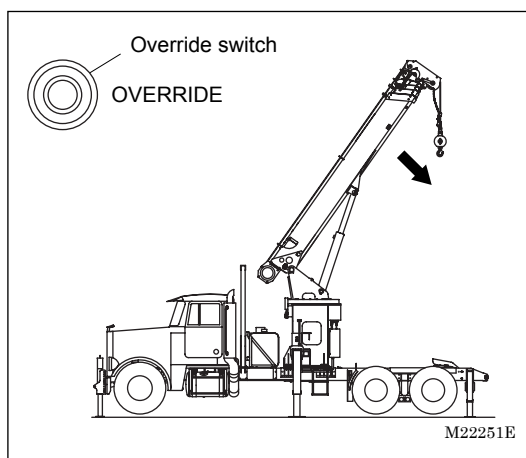
The system error alarm works when an error occurs in the system.

Type	Halted movement	Method		Measure
		Buzzer	Light	
Precautionary alarm	None	Intermittent	Flashing	Operate carefully to prevent overturning the crane.
Limit alarm	Boom lowering Hoisting up Boom extending	Continuous	Lit	Perform the following operations until the alarm goes out. <ul style="list-style-type: none"> • Raising the boom • Lower the load to ground and alter working condition. • Retracting the boom
Boom angle lower restriction alarm*1	Boom lowering Hoisting up Boom extending	Continuous	Lit	Perform the following operation until the alarm goes out. <ul style="list-style-type: none"> • Raising the boom
System error alarm*2	Boom lowering Hoisting up Boom extending	Intermittent	Flashing	Repair is required. Stop operation. Contact your nearest TADANO distributor or dealer.

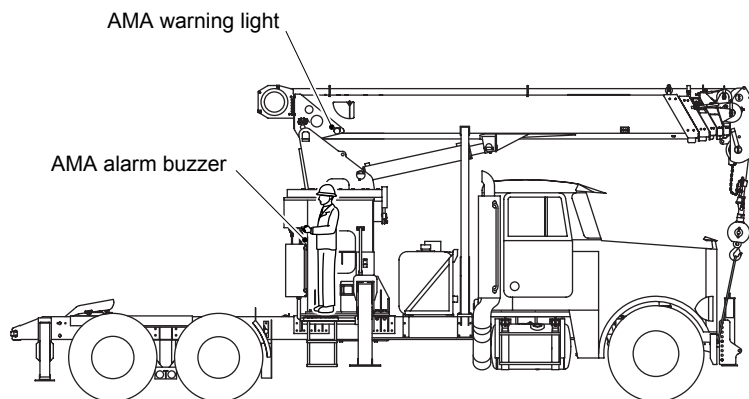
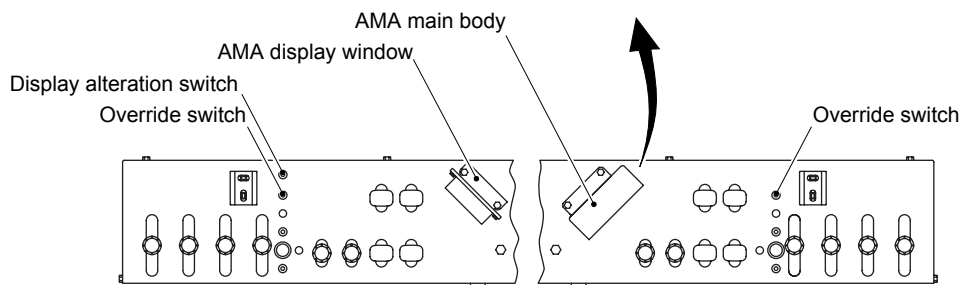
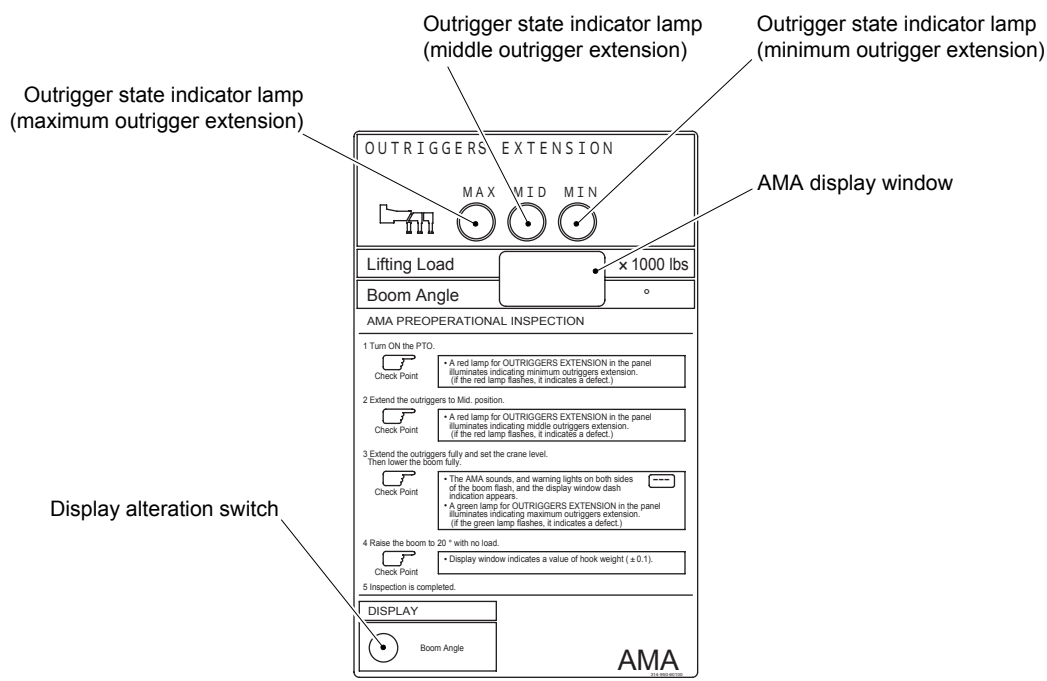
*1: "— ——" is shown in the display unit.

*2: An error code is shown in the display unit.

◆ After the boom is raised to the stroke end of the boom elevating cylinder, the AMA may hinder boom lowering. In this case, lower the boom while keeping pressing the override switch.



(2) Components



M22252E

Outrigger state indicator lamp

AMA calculates limit moment based on the outrigger extension width. Outrigger extension width is automatically distinguished into minimum extension width, middle extension width or maximum extension width.

The extension width of right and left outriggers is indicated by the lamps.

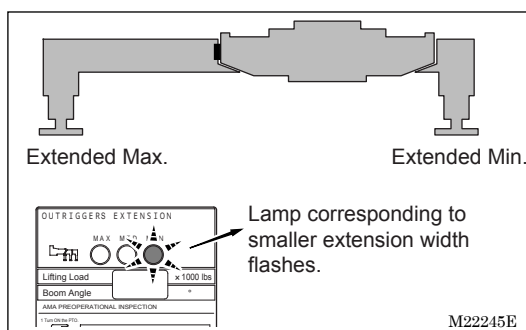
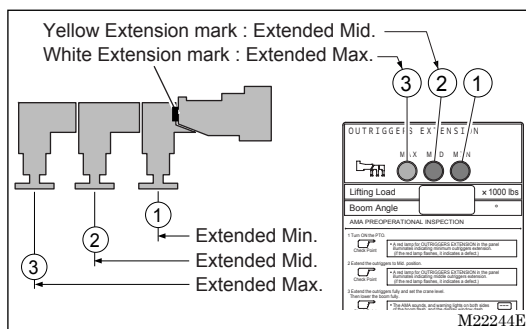
Both outriggers are extended fully: MAX indicator lamp (green) is lit.

Both outriggers are extended middle extension: MID indicator lamp (red) is lit.

Both outriggers are extended minimum extension: MIN indicator lamp (red) is lit.

◆ When the right and left outrigger extension widths differ, the smaller width is indicated by the flashing outrigger state indicator lamp.

◆ If an outrigger is extended to the position other than where a slide lock pin can secure the outrigger, the outrigger extension width is distinguished into minimum extension.



Display window

Normally they display the weight of the lifted load. You can change them into the boom angle display as necessary, using the display alteration switch. If an abnormality occurs in the system, an error code is shown.

Display alteration switch

While any of these switches is kept pressed, the display windows display boom angle.

AMA warning light

The lights light up or flash according to the cause of the alarm.

For details, see the "Safety Function" section.

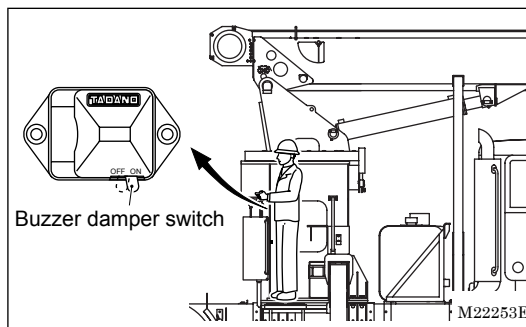
AMA alarm buzzer

The buzzer sounds continuously or intermittently, according to the cause of the alarm.

For details, see the "Safety Function" section.

The volume of the alarm buzzer can be decreased as necessary using the buzzer damper switch.

- ◆ The AMA alarm buzzer is located near the swing motor on the right side of the vehicle.
- ◆ The buzzer damper switch is attached to the alarm buzzer.



(3) AMA Preoperational Inspection

⚠ WARNING

⚠ Operating the crane while the AMA is not working properly will lead to overturning of and damage to the crane. Before operation, make sure that the AMA is working properly.

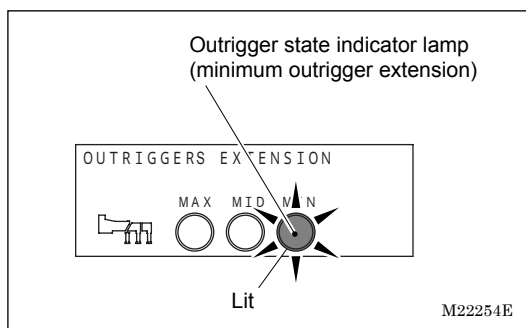
[NOTICE]

- ◆ Perform preoperational inspection with no load on hook.
- ◆ If any failure is found, do not start crane operation. Contact your nearest TADANO distributor or dealer.

Before starting operation, make sure that the overload limit device is working properly, according to the following procedure.

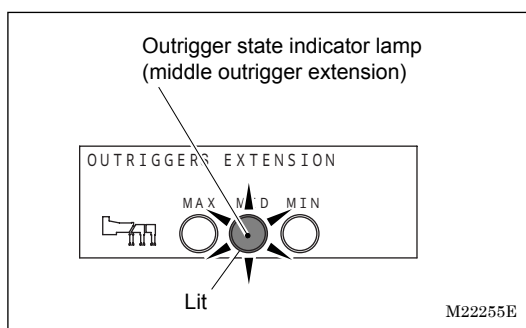
1. Engage the PTO and check the following conditions:

- The MIN outrigger state indicator lamp (red) is lit.



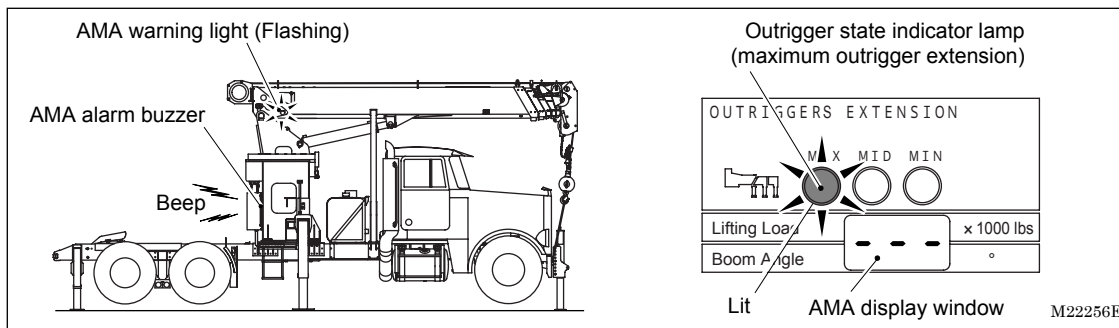
2. Extend both outriggers to the middle extension width, secure them with the lock pins, and check the following condition:

- The MID outrigger state indicator lamp (red) is lit.



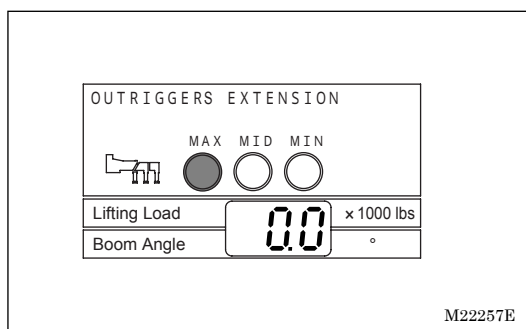
3. Extend both outriggers fully, secure them with the lock pins, set the crane level with the boom fully lowered and check the following conditions:

- The AMA alarm buzzer sounds and the AMA warning lights on the both sides of the boom flash.
- "— — —" is shown on each display window.
- The MAX outrigger state indicator lamp (green) is lit.



4. Raise the boom to 20° with no load and check the following:

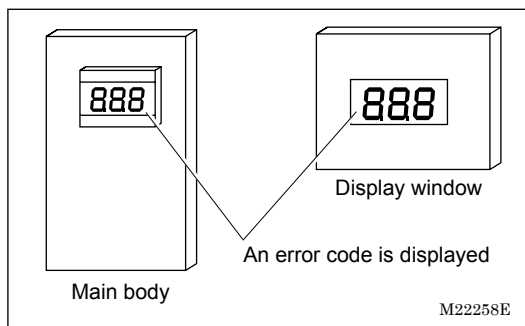
- The display window indicates the value up to 0.1 above or below of the hook weight (X 1,000 lbs).



Now the preoperational inspection of the AMA is completed.

(4) How to Deal with Errors

If an error occurs in the AMA, an error code is displayed in display window, indicating the existence of an error. At the same time, The AMA alarm buzzer sounds and the AMA warning lights on the both sides of the boom lit to alert the operator.



Error Code and its Cause

Error code	Cause
E19	Boom length signal inconsistent with boom length detector measurement (while 4th through top boom sections are fully retracted)
E24	Abnormal boom length signal
E25	Abnormal boom angle signal
E26, E27	Abnormal pressure signal
E14–E18 E21–E23 E28, E29	Error in the AMA main unit
E20	Maladjusted or defective detector (Alarm buzzer does not sound.)

Measures

When E14–E19, E21–E29, or E20 is displayed

Inspection and repair are required. Contact your nearest TADANO distributor or dealer.

Operate the crane toward the non-critical side (hoisting down, retracting the boom and raising the boom) and lower the load to unload the hook block. Then stow the boom.

[NOTICE]

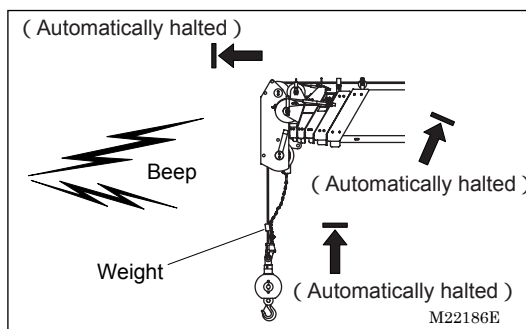
◆ The error code E20 may appear during boom lowering. In this case, stop operation for a while to check whether the error code remains. If the error code goes out, the machine is not faulty.

2-5 Other Safety Devices

(1) Anti-twoblock Device

This device prevents the crane from being damaged during an two-blocking condition. When the hook block approaches the boom head and touches the weight of the anti-twoblock device, the alarm buzzer sounds to warn the operator of the overwinding condition. At the same time, the machine automatically disables the hoisting-up operation, boom extending operation and boom raising operation to avoid possible hazards.

When this device is activated to stop the machine automatically, move the hook block away from the boom head by lowering the hook block or retracting the boom.

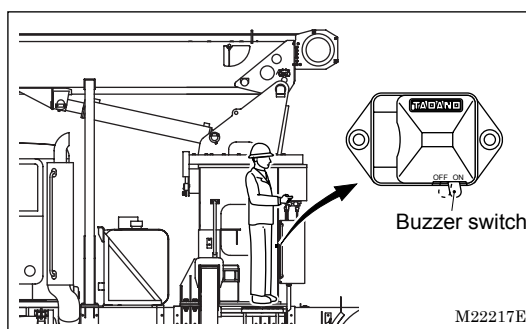


[NOTICE]

◆ When the buzzer switch is OFF, the alarm buzzer will not activate. Before starting operation, set the buzzer switch to ON, and lift the weight of the anti-twoblock device by hand to make sure that the alarm buzzer sounds.

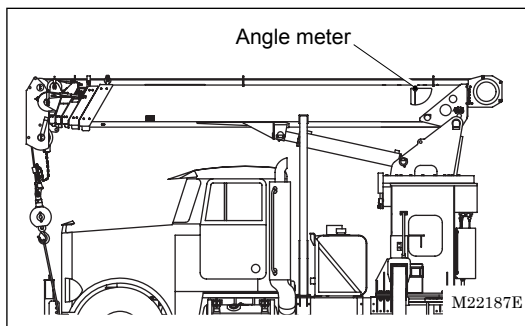
◆ If the alarm buzzer sounds and the machine automatically stops even though the hook block does not touch the weight of the anti-twoblock device, the cable may be broken or the detection switch may be defective. Contact your nearest TADANO dealer or distributor for inspection and repair.

◆ The alarm buzzer of the anti-twoblock device is located on the left side of the vehicle.



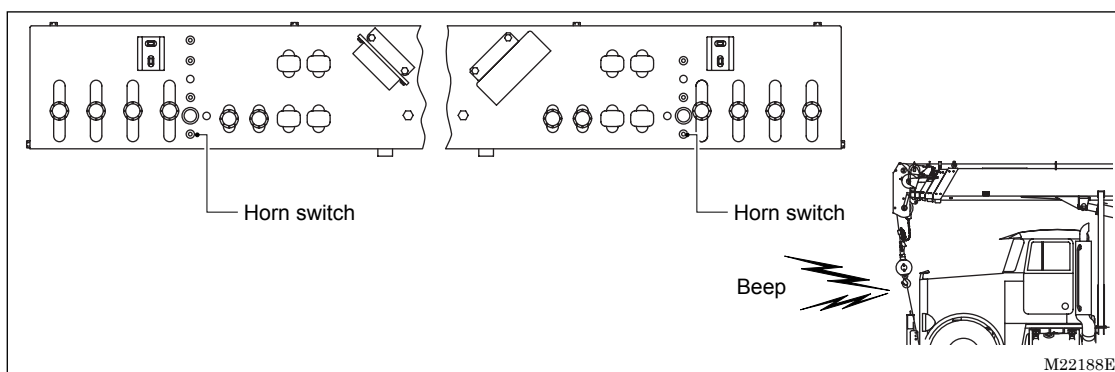
(2) Angle Meter

An angle meter is located on each side of the boom. Use it when checking the rated lifting capacity table and the working radius /lifting height chart.



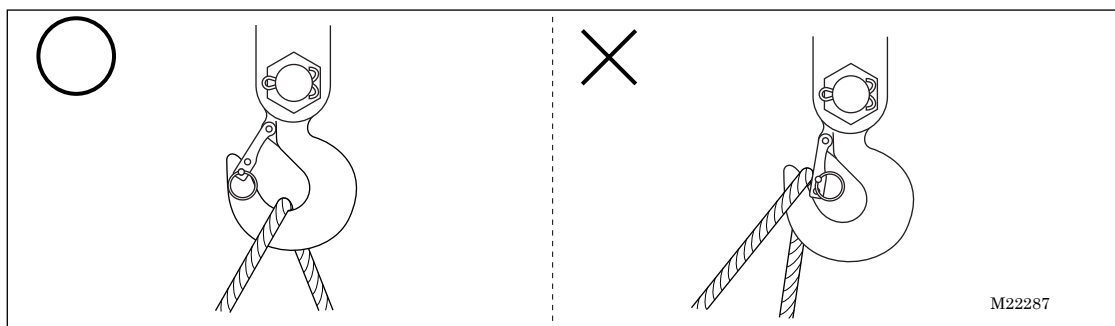
(3) Horn Switch

When the horn switch is pressed, the horn of the truck sounds. Use the horn switch to alert people around the machine, or in emergency.



(4) Safety Latch

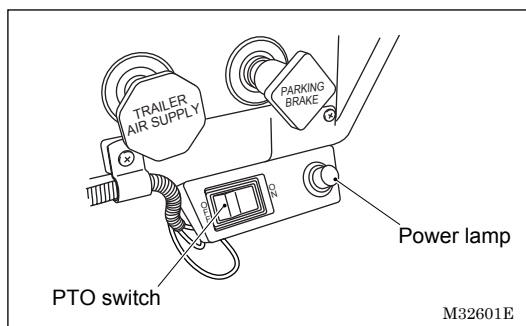
The hook is equipped with the spring latch to prevent the wire rope from coming off the hook. When attaching the rigging wire rope to the hook, make sure that the rope is properly held on the hook to prevent the rope from accidentally coming off.



(5) PTO Power Lamp

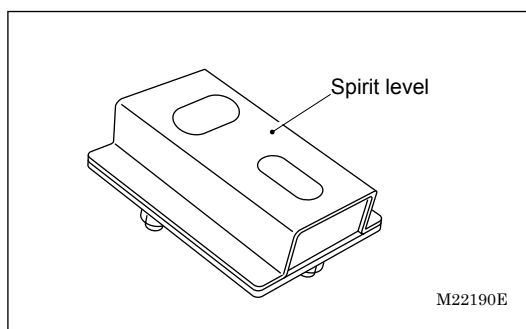
When the PTO is engaged, the power lamp will be turned ON. The power lamp indicates that the crane power supply is ON.

◆ Refer to the vehicle instruction manual for details of the PTO operation. The illustration below shows an example of the PTO lever.



(6) Spirit Level

The spirit level is used to make sure that the crane is properly leveled.

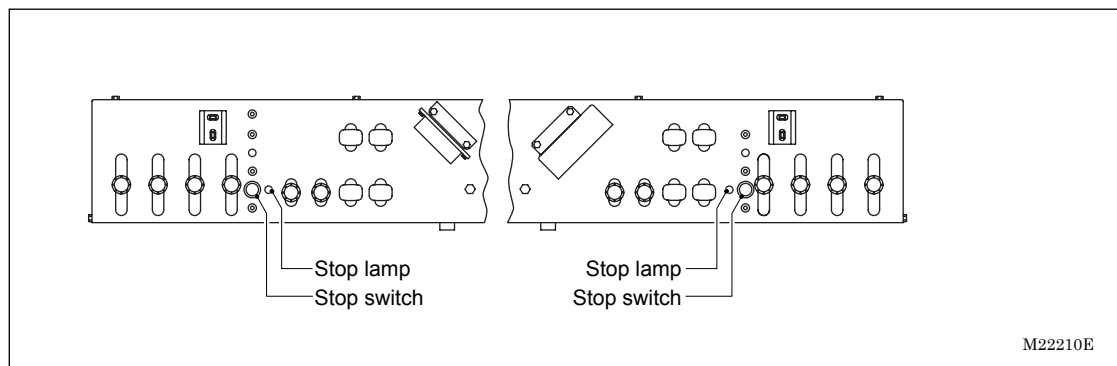


(7) Stop Switch (Stop Lamp)

[NOTICE]

◆ When the stop switch is pressed, the engine stops. If the headlights or radio is left turned on for a long time with the engine stopped, the battery will run out. Turn off such equipment quickly when the engine stops.

Use this switch if crane control through control levers is impossible or a dangerous situation arises. When the stop switch is pressed, the engine stops, all crane operations are disabled and the stop lamps light up. When resuming crane operation, press the stop switch again. The switch will reset and the stop lamps will go out. Then start the engine.



◆ The engine cannot be started while any stop switch is pressed.

2-6 Operating the PTO and Warming Up the Machine

(1) Operating the PTO

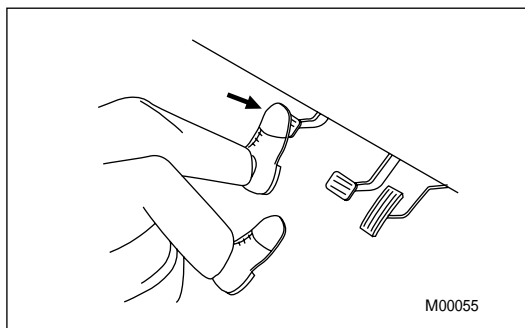
◆For operating PTO, see the manual of vehicle manufacturer. The following is an example of PTO operation.

Engaging the PTO

[NOTICE]

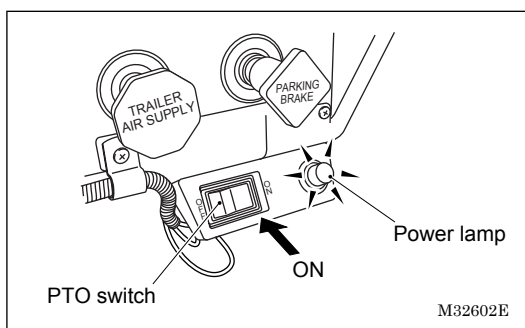
◆When pulling the PTO lever, make certain it is pulled to the stroke end. If the PTO lever is not sufficiently pulled, the PTO may not be engaged even when the power lamp is ON.

1. Set the parking brake, and make sure that the gear shift lever is set in the neutral position.
2. Make sure that all the control levers of the crane are set in the neutral position.
3. Start the engine.
4. Fully step on the clutch pedal.

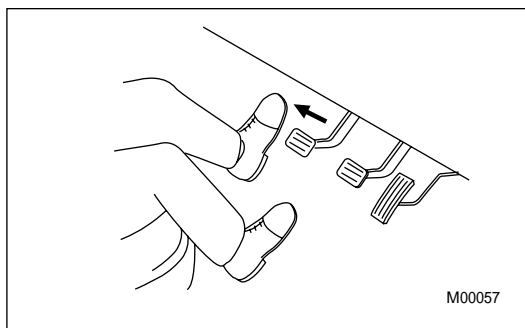


5. Place the PTO switch in the ON position. Power will be supplied to the crane, and the power lamp will be turned ON.

◆If the PTO cannot be engaged, step on the clutch pedal again.

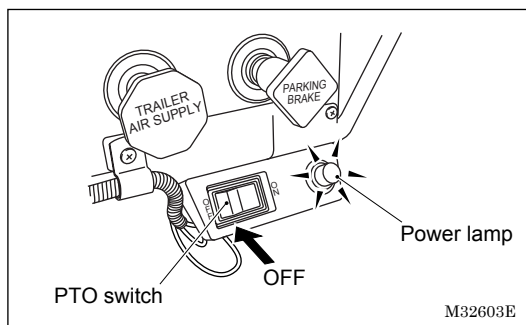


6. Release the clutch pedal slowly, and remove your foot from the pedal.



Disengaging the PTO

1. Fully step on the clutch pedal.
 2. Place the PTO switch in the OFF position.
The power lamp will turn OFF.
- ◆ If the PTO cannot be disengaged, step on the clutch pedal again.



3. Remove your foot from the clutch pedal.

PTO for Automatic Transmission or Factory-equipped PTO

Refer to the operation manual provided by the carrier manufacturer.

(2) Warming Up the Machine

[NOTICE]

◆Before starting crane operation, be sure to warm up the machine. Particularly, in cold weather, the viscosity of the engine oil and hydraulic oil becomes high. If you start operation without sufficiently warming up the machine, the engine or hydraulic equipment may be damaged.

1. After engaging the PTO, warm up the machine at an idling speed for approx. 5 minutes. In cold weather, prolong the warm-up time according to the ambient temperature.
2. Increase the engine speed to 800 to 1000 min⁻¹ {rpm}, and operate the crane without a load for approx. 5 to 10 minutes.
In cold weather, prolong the unloaded operation time according to the ambient temperature.
3. After completion of the unloaded operation, you can start crane operation with a load.

Inspection during Warming Up

Check the engine, PTO, hydraulic pump, hydraulic motor, swing bearing, and each pivot pin for abnormal sounds. If you hear abnormal sounds with these parts, stop operation immediately, and contact your nearest TADANO dealer or distributor for inspection.

2-7 Outriggers and Stabilizers

(1) Setting the Crane

⚠ WARNING

⚠ Be sure to set the crane outriggers and stabilizers on firm level ground. Operating the crane without extending the outriggers and stabilizers may result in overturn accidents. To operate the crane, be sure to extend the outriggers and stabilizers.

To operate the crane safely, it is essential to set the outriggers and stabilizers on firm ground that can sufficiently support the machine body and the load.

If the outriggers and stabilizers are set on soft ground, the jack floats may sink into the ground, causing the crane to tilt, and in the worst case, to overturn.

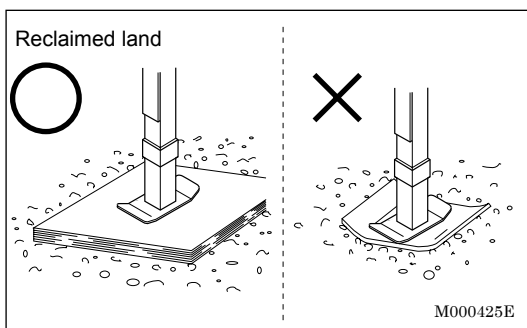
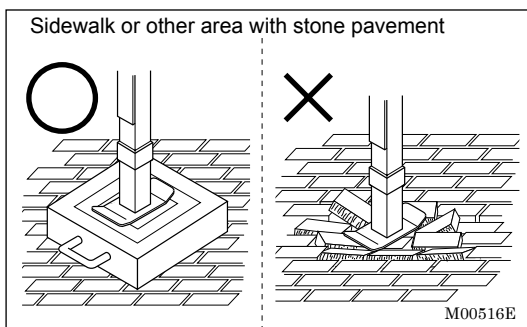
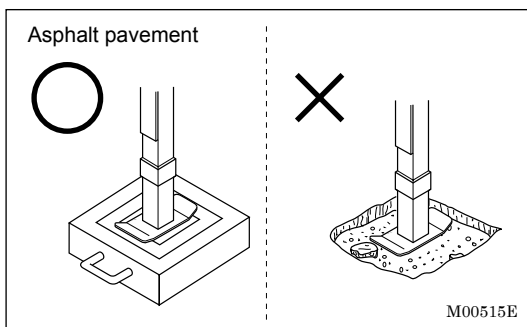
Even if the ground appears to be firm, it may be not strong enough to support the machine, depending on the internal conditions. Be specially cautious about the following ground conditions, and adapt the ground as required.

- (1) Asphalt pavement
- (2) Sidewalk or other areas with stone pavement
- (3) Areas that have been filled up after excavation
- (4) Reclaimed land
- (5) Areas near a road shoulder or pit

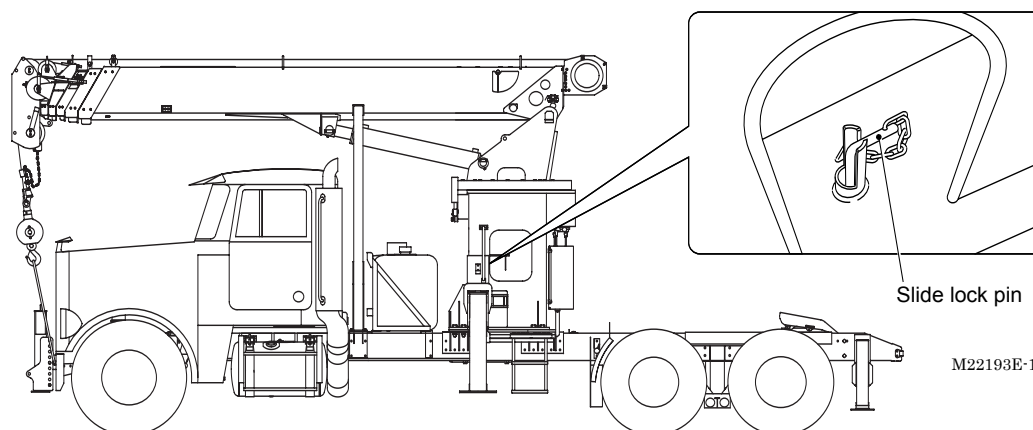
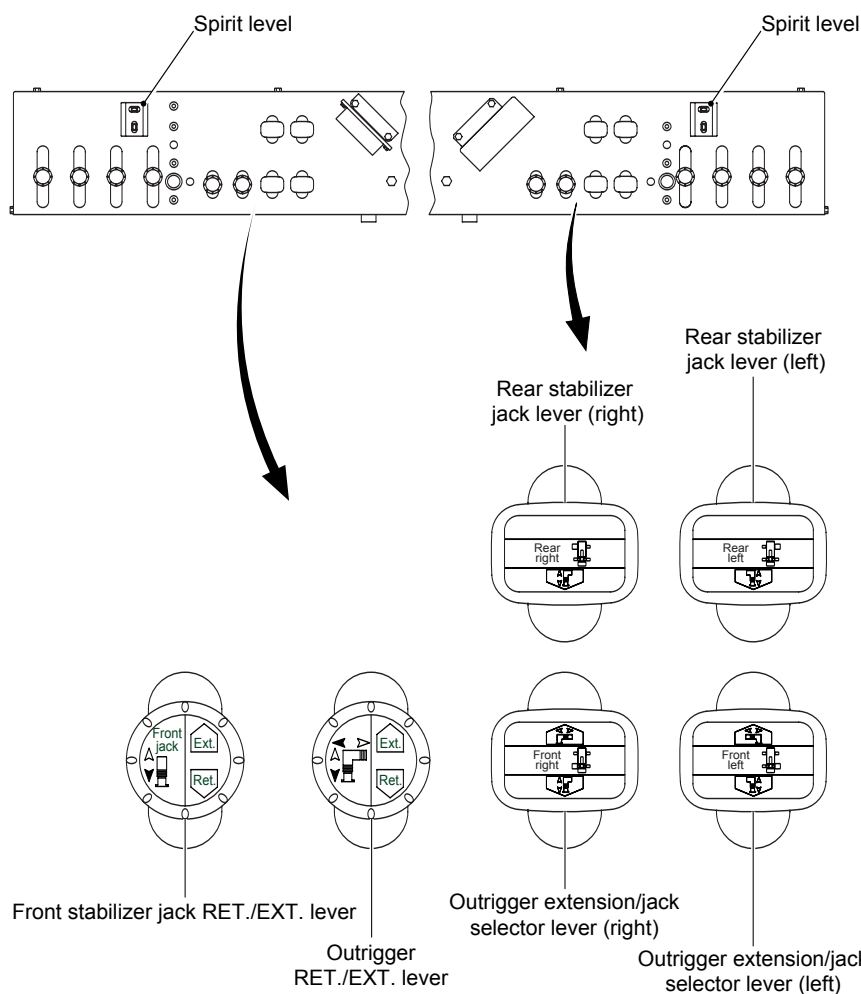
Adapting the Ground

To install the crane on soft ground or on an area that is not strong enough to support the machine, take the following actions to adapt the ground:

- (1) To install the crane on a slope or uneven ground, grade the slope or uneven surface of the ground so that the machine can be levelled.
- (2) To disperse the force applied to the ground, place steel plates or wood blocks strong and large enough to support the machine according to the ground condition. Set the jack floats at the center of these plates or blocks.



(2) Controls



(3) Extending the Outriggers and Stabilizers

⚠ WARNING

⚠ Always extend the outriggers to the maximum width. Even if the load can be lifted with the outriggers extended to the minimum or middle extension width, extend the outriggers to the maximum width to ensure safety.

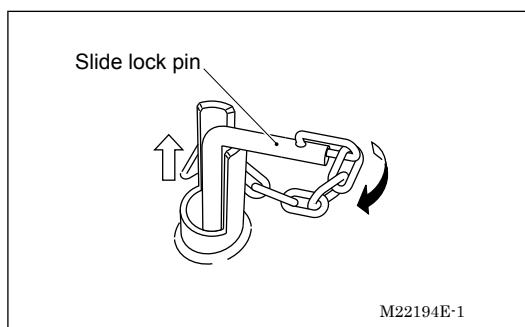
If it is absolutely necessary to set the outriggers to the middle or minimum extension width, make sure that the actual load does not exceed the load rated for the outrigger minimum extension width.

⚠ Extending the outriggers and stabilizers without checking safety of the surroundings is hazardous. Before extending both right and left outriggers and stabilizers simultaneously, check the surrounding area.

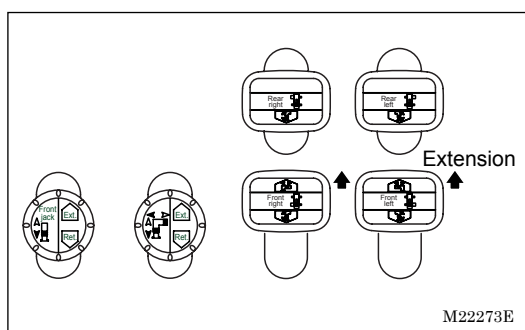
⚠ If an outrigger is not fixed with the lock pin, the outrigger beam may be accidentally retracted during operation. After extending the outriggers, make sure that the outriggers are fixed with the lock pins.

⚠ If the crane is not leveled, the load radius increases when the boom swings toward the lower side. In the worst case, the crane may overturn. When setting the crane, make sure that the machine is leveled by checking the spirit level.

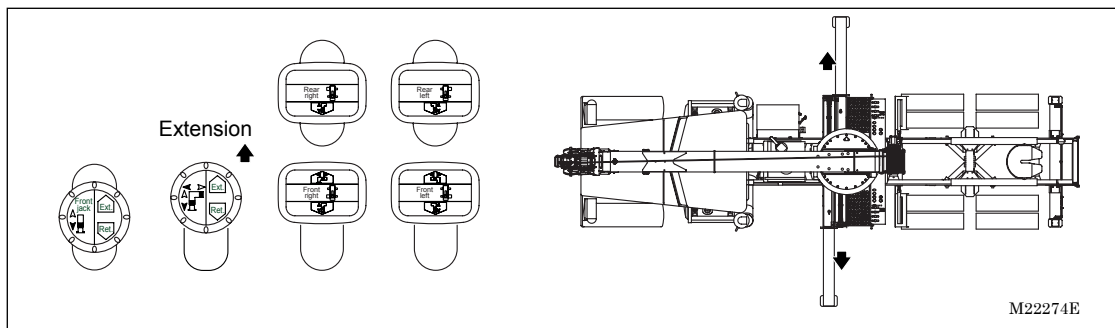
1. Set the right and left side lock pins and shift them to the "FREE" side.



2. Shift the right and left outrigger extension/jack selector levers to the "extension" side.



3. Shift the outrigger RET./EXT. lever to "Ext." side to extend right and left front outrigger beams.



◆ Use the outrigger extension marks to check the outrigger extension width visually. The outrigger extension marks are located on both sides of each outrigger. The yellow marks indicate the middle extension, and the white marks indicate the maximum extension.

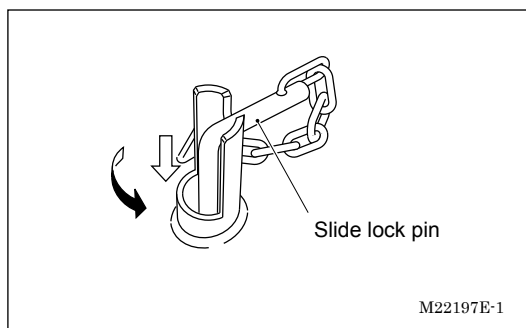
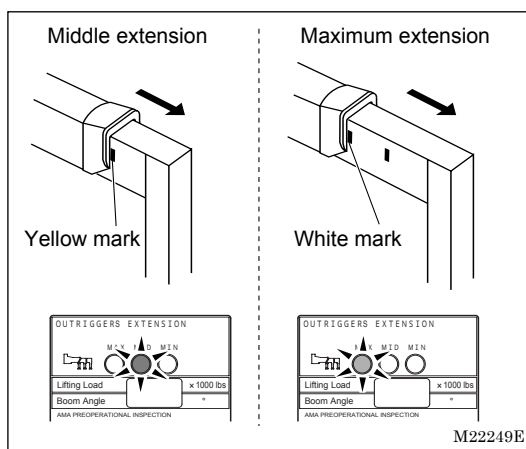
◆ When the outriggers are extended to the extent that the yellow marks are exposed, the outrigger state indicator lamps (MID) light up. When the outriggers are extended to the extent that white marks are exposed, the outrigger state indicator lamps (MAX) light up.

◆ When extending the boom to 31.2ft or longer, extend the outriggers to middle or maximum extension width beforehand.

◆ When extending the boom to 56.8ft or longer, extend the outriggers to maximum extension width beforehand.

4. When the outrigger almost reaches the desired width, stop the operation and shift the slide lock pin to the "LOCK" side.

◆ If you extend the outrigger to the middle extension, shift the slide lock pin when the outrigger beam extends for a few inches; if you extend it to the maximum extension, shift the slide lock pin when the outrigger beam extends for a few inches after a yellow mark has begun to be exposed.



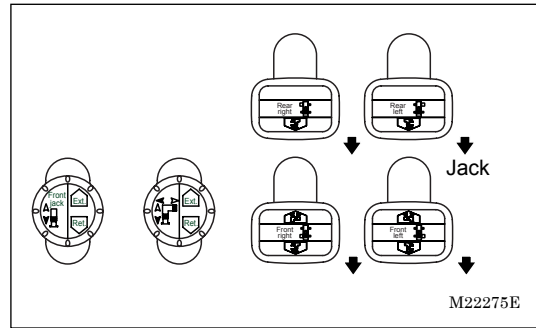
5. Shift the outrigger RET./EXT. lever to "Ext." side again to extend the front outrigger beams until the lock pins drop in.

◆ When a lock pin drops in, it secures the outrigger to the locking position. After extending an outrigger beam, check the outrigger is locked by the lock pin.

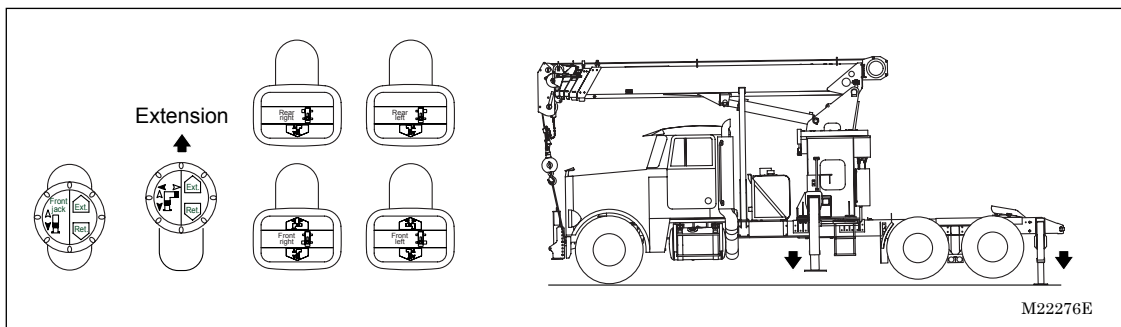
◆ After completing outrigger extension operation, return the all control lever to the neutral position.

6. Shift the right and left outrigger extension/jack selector levers to the "jack" side.

7. Shift the right and left rear stabilizer jack levers to the "jack" side.



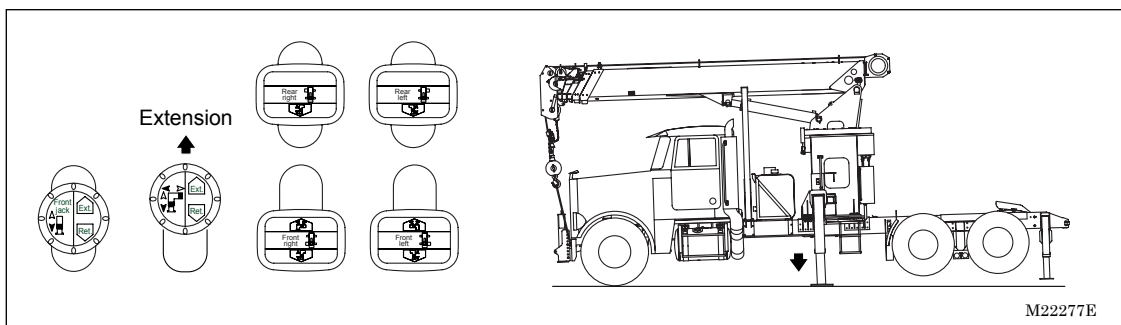
8. Shift the outrigger RET./EXT. lever to the "Ext." side. The jacks of the outriggers and rear stabilizers will extend.



◆ When the rear stabilizer jacks extend and the rear wheels clear the ground, stop operation and return the right and left rear stabilizer jack lever to the neutral position.

9. Shift the outrigger RET./EXT. lever to the "Ext." side again. The jacks of the outriggers will extend.

◆ When the front wheels or the jacks of the rear stabilizers clear the ground, stop extending the outrigger jacks.

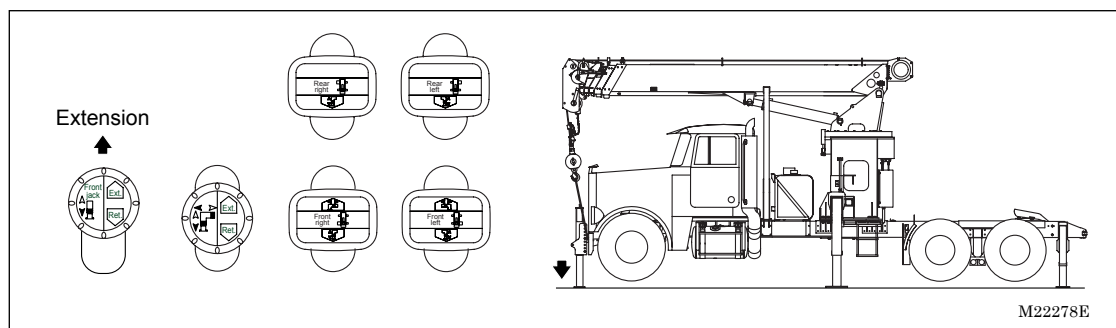


◆ After completing outrigger extension operation, return the all control lever to the neutral position.

10. Shift the front stabilizer jack RET./EXT. lever to the "Ext." side. The jack of the front stabilizer will extend.

◆ Extend the jack so that the crane is set level, checking the spirit level. If necessary for setting the crane level, retract the jacks of the rear stabilizers.

◆ Extend the jack so that all the wheels are clear of the ground.

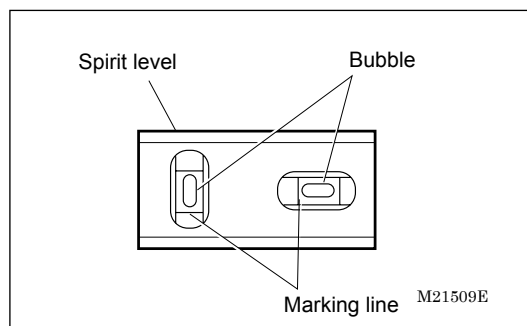


◆ After completing front stabilizer extension operation, return the front stabilizer jack RET./EXT. lever to the neutral position.

11. Make sure that the crane is leveled by checking the spirit level.

◆ If the bubble in the spirit level is positioned between the marking lines in the checking window, the machine is leveled.

If the bubble in the spirit level is not positioned between the marking lines, retract the jack cylinder in the side where the bubble exceeds the marking line until the bubble is positioned between the marking lines.



12. Make sure that all jack floats are in firm contact with the ground by shaking the jacks back and forth.

◆ Lower any unseated float until it is in contact with ground.

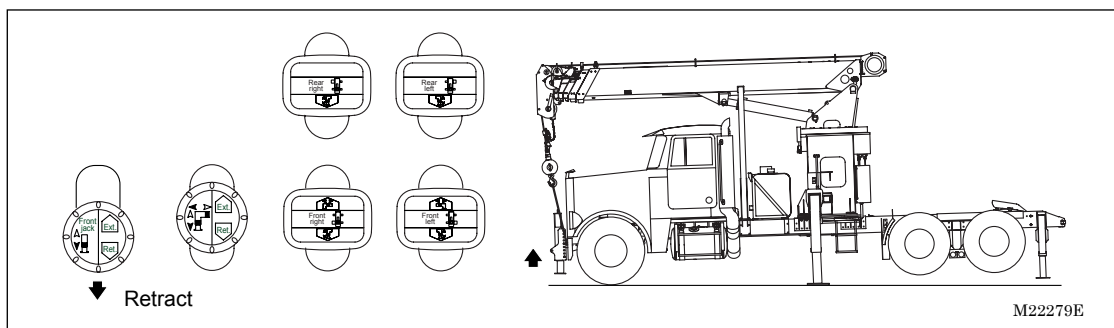
(4) Stowing the Outriggers and Stabilizers

⚠ WARNING

⚠ It is dangerous to stow the outriggers and stabilizers when the boom is raised or extended. Before stowing the outriggers and stabilizers, stow the boom to set the machine in the traveling configuration.

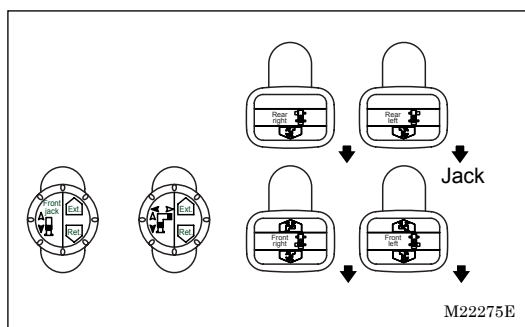
⚠ If the crane travels without the slide lock pins properly set in the outriggers, the outriggers may be accidentally extended, resulting in an accident. After stowing the outriggers, be sure to set the slide lock pins in the outriggers.

1. Shift the front stabilizer jack RET./EXT. lever to the "Ret." side. The jack of the front stabilizer will retract.

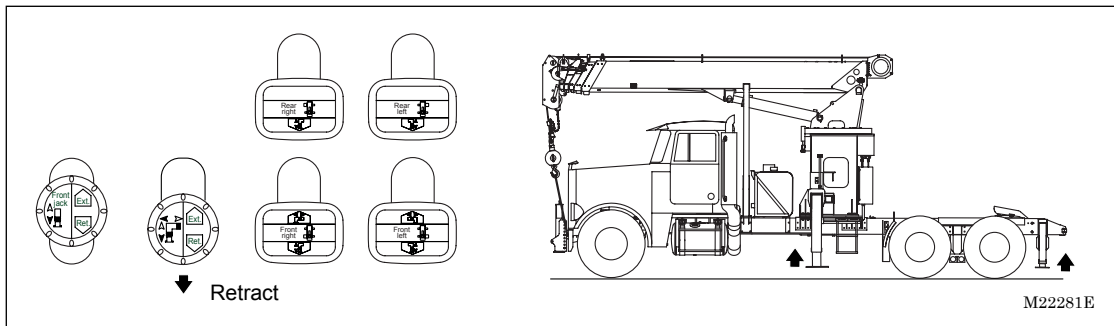


- ◆ After completing front stabilizer retraction operation, return the front stabilizer jack RET./EXT. lever to the neutral position.

2. Shift the right and left outrigger extension/jack selector levers to the "jack" side.
3. Shift the right and left rear stabilizer jack levers to the "jack" side.

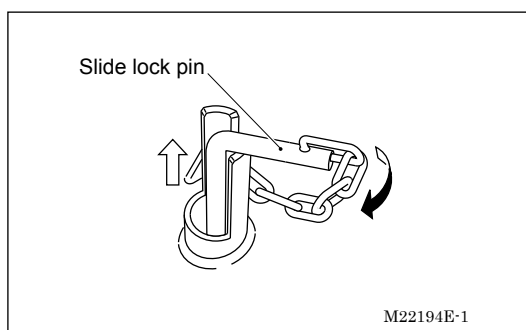


4. Shift the outrigger RET./EXT. lever to the "Ret." side. The jacks of the outriggers and rear stabilizers will retract.

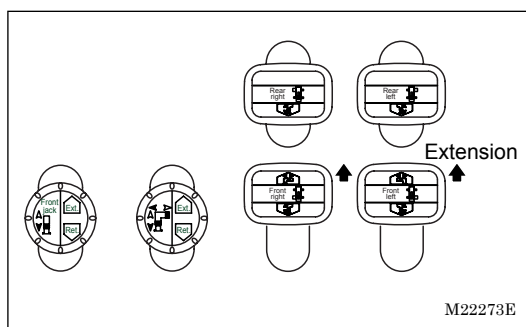


◆ After completing outrigger and stabilizer retraction operation, return the all control lever to the neutral position.

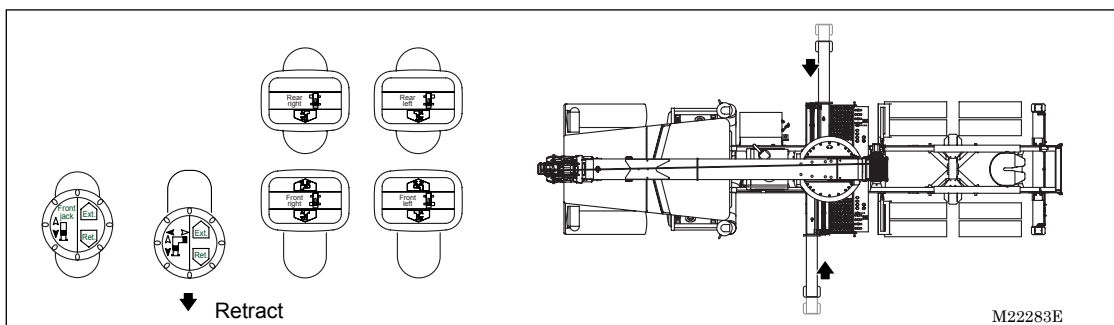
5. Pull up the right and left slide lock pins and shift them to the "FREE" side.



6. Shift the right and left outrigger extension/jack selector levers to the "extension" side.



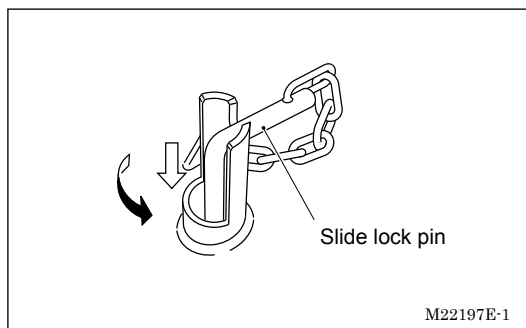
7. Shift the outrigger RET./EXT. lever to "Ret." side to retract right and left front outrigger beams.



◆ After completing outrigger retraction operation, return the all control lever to the neutral position.

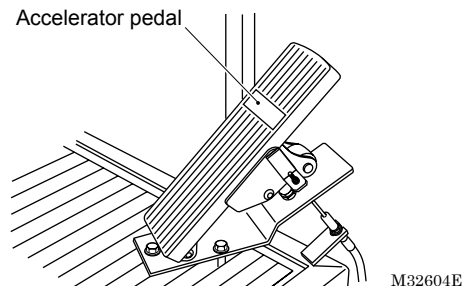
8. Insert the right and left slide lock pins.

◆ Make sure that the outriggers are locked by the lock pins.



2-8 Acceleration

(1) Controls



(2) Acceleration

When the accelerator pedal is depressed, the engine speed and crane control speed increase.

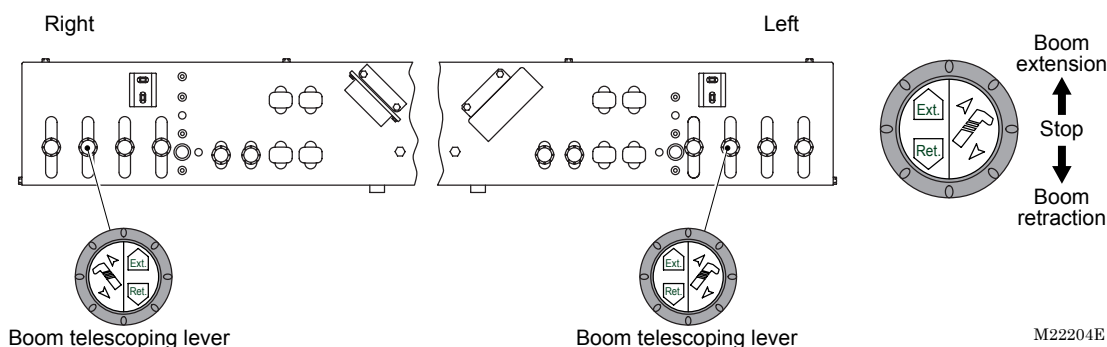
When the pedal is released, the engine speed returns to the idling speed.

Use the accelerator in the following conditions:

- (1) To adjust the engine speed during warming up
- (2) To adjust the idling speed during crane operation

2-9 Telescoping the Boom

(1) Controls



(2) Extending/Retracting the Boom

⚠ WARNING

- ⚠ Lifting a load from the ground by telescoping the boom may cause the crane to overturn or to be damaged. Lift a load clear of the ground by hoisting up.
- ⚠ When the boom is extended, the load radius increases. Assure safety by checking the rated lifting capacity table and the AMA before extending the boom.
- ⚠ Do not push or pull the load by telescoping the boom. This practice can damage the crane and lead to an accident.
- ⚠ The telescoping speed of the 4th through top boom sections is faster than that of 2nd and 3rd boom sections because the 4th through top boom sections telescope simultaneously. Pay attention when telescoping the extended boom with a load on hook.

- ◆ When extending the boom to 31.2 ft or longer, extend the outriggers to middle or maximum extension width beforehand.
- ◆ When extending the boom to 56.8 ft or longer, extend the outriggers to maximum extension width beforehand.

To extend or retract the boom, operate the boom telescoping lever.

(1) Extending the boom:

Move the boom telescoping lever to “Ext.”

(2) Retracting the boom:

Move the boom telescoping lever to “Ret.”

(3) Stop:

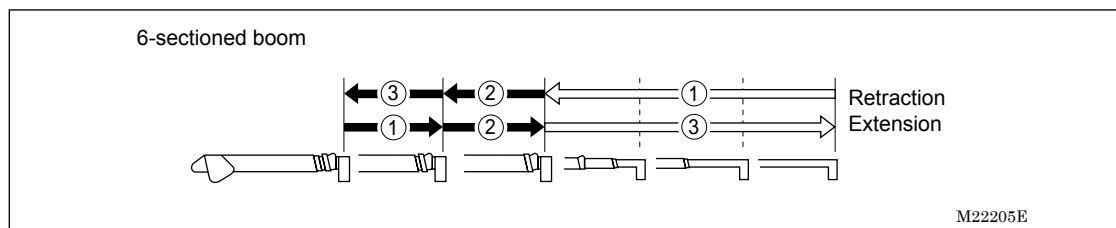
Return the boom telescoping lever to the neutral position.

- ◆ To adjust the telescoping speed, operate the accelerator pedal.

◆ Even if the winch lever is not operated, the load is lowered by a boom retracting operation, and lifted by a boom extending operation. Always pay attention to the load position.

◆ The figure below shows the boom section telescoping order. An outlined white arrow \Rightarrow shows the boom sections that will be simultaneously telescoped.

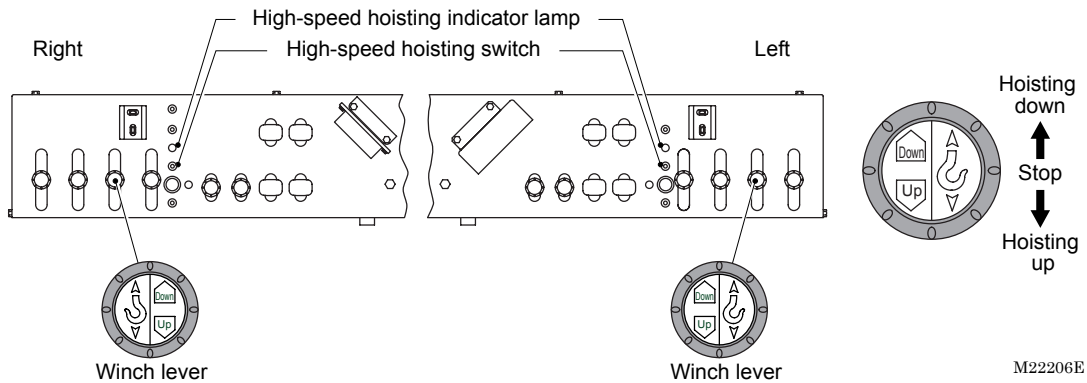
The 4th boom section has 2 \blacktriangledown marks which indicate the middle extension positions on each lateral face. The boom length when a \blacktriangledown mark is half exposed corresponds to the boom length indicated on the rated lifting capacity table.



- When the first \blacktriangledown mark is half exposed on the 4th boom section lateral face, the boom is extended to 56.8 ft.
- When the second \blacktriangledown mark is half exposed on the 4th boom section lateral face, the boom is extended to 69.6 ft.

2-10 Hoisting

(1) Controls



(2) Hoisting Up and Down

⚠ WARNING

⚠ When a load is lifted, the load radius increases due to boom deflection. Therefore, a load within the load radius limit may exceed the limit when lifted, causing the crane to be overloaded. Stop lifting the load immediately after the load leaves the ground and check the load condition to make sure that the crane is not overloaded, and then re-start the operation.

⚠ Leave at least three wraps of wire rope on the winch drum. If the load is lowered below ground level, the wire rope may be too short. Whenever only three wraps of wire rope remain on the winch drum, stop lowering the load.

Before starting an operation, lower the hook block until only three wraps of wire rope remain on the winch drum, and make sure that the wire rope is long enough. If the wire rope is too short, retract the boom when lowering the load.

When the entire amount of wire rope is let out of the winch drum, the frictional force will be insufficient, and load is directly applied to the end of the rope, causing the rope to be broken or damaged.

[NOTICE]

◆ If you perform a hoist-down operation after the hook block reaches the ground, the wire rope will become slack and therefore disorderly wound on the winch drum. Lifting a load with an disorderly-wound wire rope damages the wire rope and reduces its service life. Do not perform a hoisting operation after the hook block reaches the ground. If the hook block reaches the ground and the wire rope is irregularly wound on the winch drum, move the hook block away from the ground by extending or raising the boom, and then hoist down to correct the disorderly-wound condition.

◆ When a high-speed hoisting switch is used continuously, the hydraulic oil temperature rises remarkably. When using a high-speed hoisting switch, pay attention to the hydraulic oil temperature and avoid using the switch for a long time.

To hoist up or down the hook block, operate the winch lever.

(1) Hoisting up:

Move the winch lever to "Up".

(2) Hoisting down:

Move the winch lever to "Down".

(3) Stop:

Return the winch lever to the neutral position.

◆ To adjust the hoisting speed, operate the accelerator pedal and/or high-speed hoisting switches.

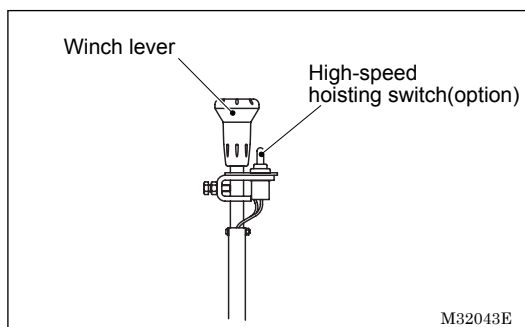
(3) High-speed Hoisting Switch

Use the switch to increase the hoisting speed from the normal speed.

When a high-speed hoisting switch is kept pressed, the high-speed hoisting indicator lamps light up and the hoisting speed is raised. When the switch is released, the high-speed hoisting indicator lamps go out and the hoisting speed returns to the normal speed.

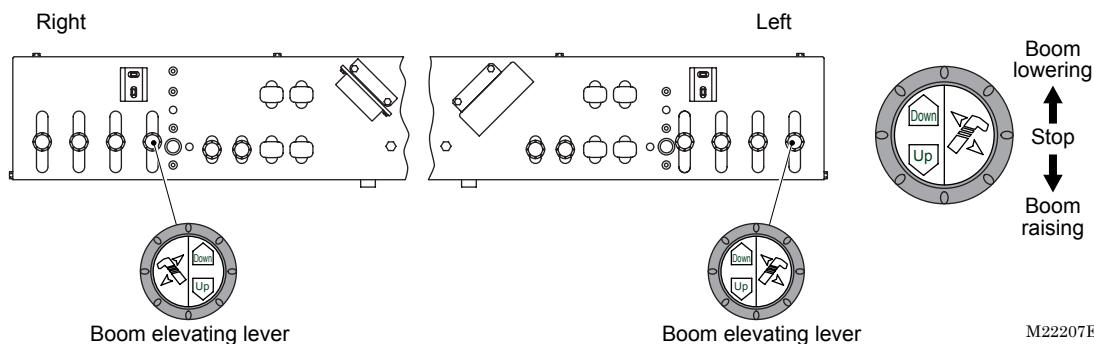
The high-speed hoisting switches can be equipped to the winch levers as an option.

You are allowed to operate the winch lever and the high-speed hoisting switch by single hand.



2-11 Elevating the Boom

(1) Controls



(2) Raising/Lowering the Boom

⚠ WARNING

- ⚠ Operate the control lever slowly. Pay attention particularly when the boom is substantially extended, since abruptly operating the control lever causes the load to sway at the start and stop of operation.
- ⚠ Lifting a load from the ground by raising the boom may cause the crane to be overturned or damaged. To lift a load from the ground, hoist it up by operating the winch lever.
- ⚠ As the boom is lowered, the load radius increases. When lowering the boom with a load lifted, make sure that the crane is not overloaded.
- ⚠ Before lowering the boom, make sure that the operating condition is safe, referring to the rated lifting capacity table.

[NOTICE]

- ◆ If the boom is excessively raised when the boom is short, the hook block or load may hit against the boom, guide sheave or boom elevating cylinder. Pay attention when raising the boom.

To raise or lower the boom, operate the boom elevating lever.

(1) Raising the boom:

Move the boom elevating lever to "Up".

(2) Lowering the boom:

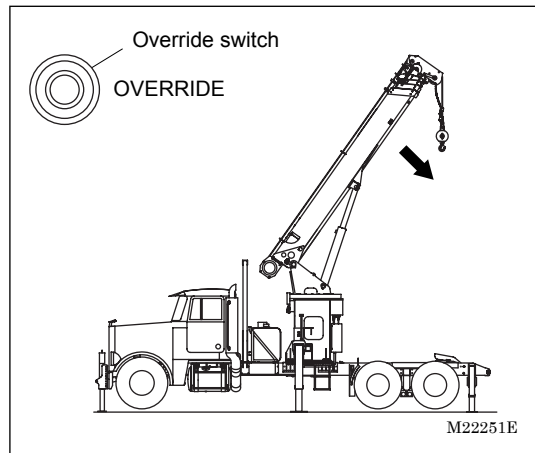
Move the boom elevating lever to "Down".

(3) Stop:

Return the boom elevating lever to the neutral position.

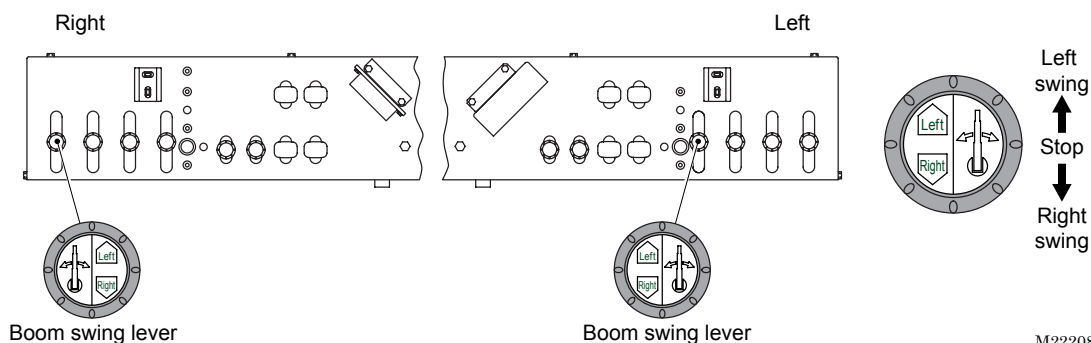
- ◆ To adjust the boom elevating speed, operate the accelerator pedal.

◆ After the boom is raised to the stroke end of the boom elevating cylinder, the AMA may hinder boom lowering. In this case, lower the boom while keeping pressing the override switch.



2-12 Swinging the Boom

(1) Controls



(2) Swinging the Boom

⚠ WARNING

⚠ Operate the control lever slowly, since a boom swing operation easily allows the load to sway. During a boom swing operation, run the engine at a low speed, and operate the control lever slowly.

⚠ It is dangerous to swing the boom with a load lifted at a high position. Swing the boom slowly with the load at a position near the ground until the load becomes stable.

[NOTICE]

◆ When swinging the lowered boom, be careful so that the hook block does not hit against any part of the cab or boom rest.

To swing the boom, operate the boom swing lever.

(1) Right swing:

Move the boom swing lever to "Right".

(2) Left swing:

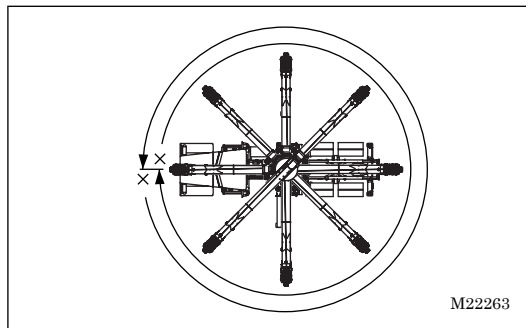
Move the boom swing lever to "Left".

(3) Stop:

Return the boom swing lever to the neutral position.

◆ For the machines with 375° non-continuous swing specification, though the boom can be swung to any orientation, it cannot be rotated continuously.

When the boom is swung one rotation and it returns to over-front, the boom swing lever returns to neutral spontaneously and further swing in the same direction becomes impossible.



◆ To adjust the boom swing speed, operate the accelerator pedal.

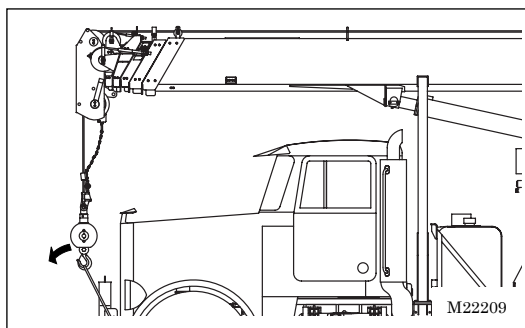
2-13 Taking Out the Hook Block and Setting the Machine Ready for Travel

(1) Taking Out the Hook Block

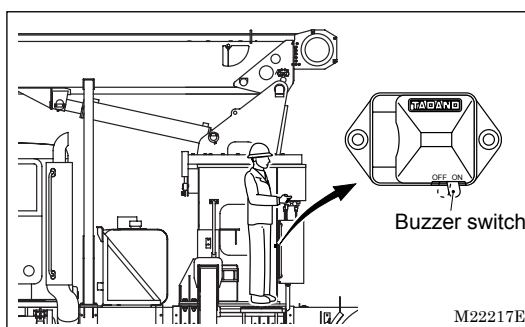
[NOTICE]

◆When swinging the lowered boom, be careful so that the hook block does not hit against any part of the cab or boom rest.

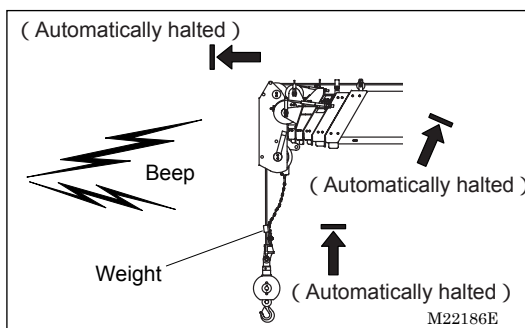
1. Extend the outriggers and place the crane in a level position.
2. Operate the winch lever to the "Down" side to loosen the winch wire rope.
3. Detach the hook holding rope from the hook block.



4. Turn on the anti-two-block device buzzer switch.



5. Make sure that anti-two-block device buzzer sounds when the hook is in overhoisted condition.



(2) Setting the Machine Ready for Travel

⚠ WARNING

⚠ If the crane travels with the boom raised, the boom may hit against overhead wires or bridge girders. Before traveling, stow the boom on the boom rest.

⚠ If the crane travels without the hook block fixed in place, the hook block swings and hinders the driver's view, and may hit against other traveling vehicles, resulting in an accident. This also causes the wire rope to be damaged.

During travel, stow the hook block in the specified position.

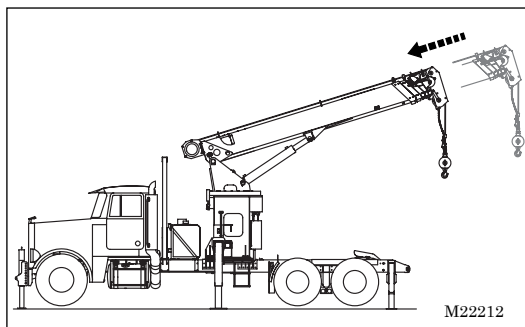
[NOTICE]

- ◆ Stow the boom on the boom rest.

After completion of a crane operation, stow the hook block according to the following procedure:

When stowing the boom at front:

1. Retract the boom fully.

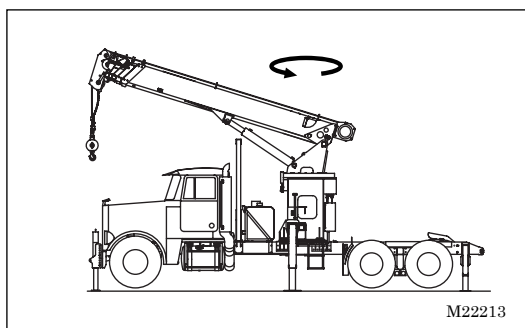


[NOTICE]

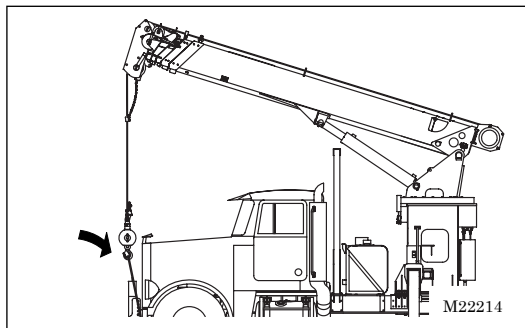
◆ When swinging the lowered boom, be careful so that the hook block does not hit against any part of the cab or boom rest.

2. Swing the boom to over-front.

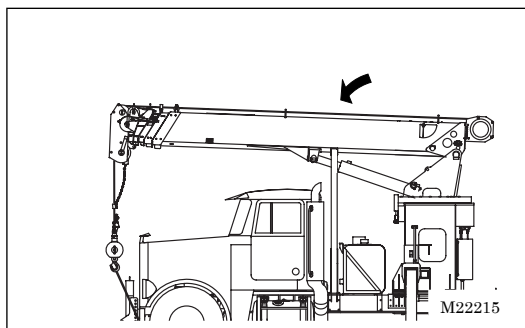
◆ When the boom swing lever is returned to the neutral position, the boom swing is automatically locked.



3. Place the hook block on the hook hanger wire rope.



4. Stow the boom on the boom rest.



⚠ WARNING

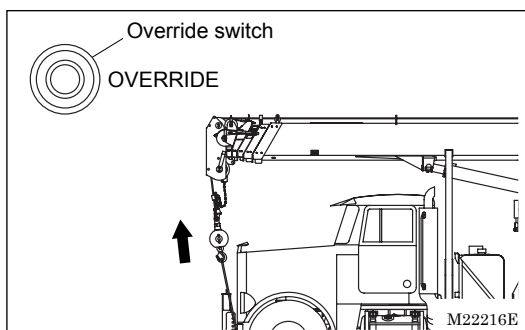
⚠ When the override switch is used, overwinding is not halted automatically because the automatic stop function of the anti-twoblock device is deactivated. If the hook block is overwound, the hook block hitting the boom head will damage the crane or the falling load will cause an accident. Do not use the override switch while a load is on the hook.

5. Hoist up the hook block gradually until the winch wire rope becomes a little tense.

[NOTICE]

◆ If the winch wire rope is tensed too much, the chassis frame may be deformed or the hook hanger holder may be damaged. Take care not to wind up too much.

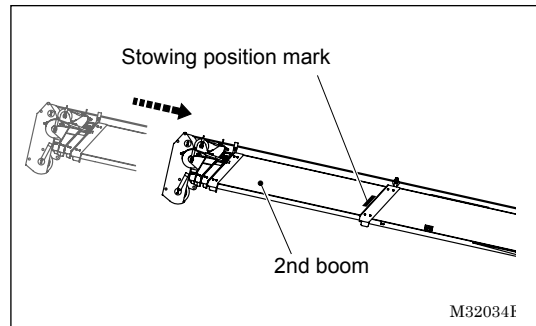
◆ If the anti-twoblock device hinders hoisting up, keep pressing the override switch and perform hoisting-up operation.



6. Set the anti-twoblock device buzzer switch off to stop the buzzer from sounding.

When stowing the boom at rear:

1. Retract the boom to the stowing position mark of the 2nd boom section.

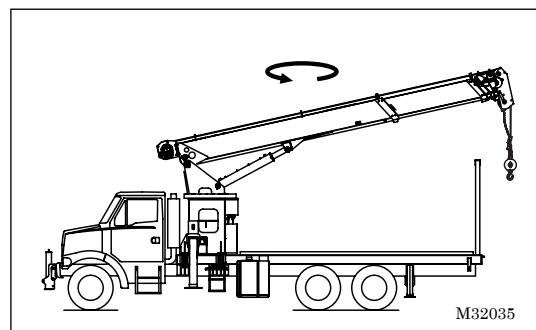


[NOTICE]

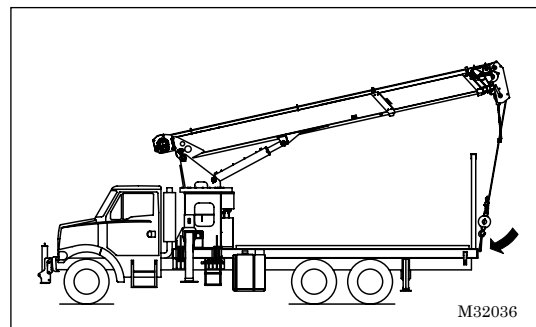
◆When swinging the lowered boom, be careful so that the boom or hook block does not hit against any part of the cab or boom rest.

2. Swing the boom to over-rear.

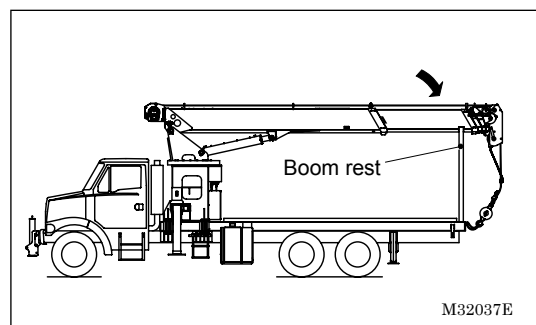
◆When the boom swing lever is returned to the neutral position, the boom swing is automatically locked.



3. Place the hook block on the hook hanger wire rope.



4. Stow the boom on the boom rest.



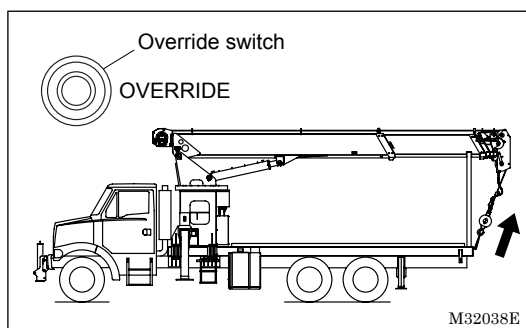
⚠ WARNING

⚠ When the override switch is used, overwinding is not halted automatically because the automatic stop function of the anti-twoblock device is deactivated. If the hook block is overwound, the hook block hitting the boom head will damage the crane or the falling load will cause an accident. Do not use the override switch while a load is on the hook.

5. Hoist up the hook block gradually until the winch wire rope becomes a little tense.

[NOTICE]

- ◆ If the winch wire rope is tensed too much, the chassis frame may be deformed or the hook hanger holder may be damaged. Take care not to wind up too much.
- ◆ If the anti-twoblock device hinders hoisting up, keep pressing the override switch and perform hoisting-up operation.



6. Set the anti-twoblock device buzzer switch off to stop the buzzer from sounding.

2-14 Reeving Wire Rope

(1) Standard Number of Parts of Line

⚠ WARNING

⚠ If the wire rope is reeved in a number of parts of line greater than the standard and the boom is raised to a large angle, the extra wraps of rope that should be left on the drum will be unwound before the hook block reaches the ground, causing damage to the wire rope. When the number of parts of line is greater than the standard or the load is being handled on a site that has a significant elevation differences, ensure that more than three wraps of rope will remain on the winch drum while the load is lowered. Never exceed the allowable load for one part of line. (See the "INFORMATION AND DATA" section.)

Select the number of parts of line that ensures the most efficient operation, taking into consideration boom length, load mass, hoisting speed and other conditions such as winch drum wire rope capacity.

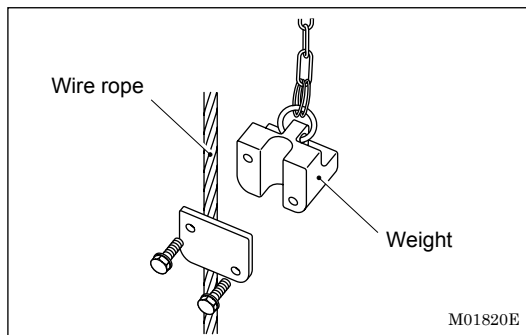
Number of parts of line	1	2	4	5
Reeving pattern				
Max. of load	7,200 lbs.	14,400 lbs.	28,800 lbs.	36,000 lbs.
Boom length	18.4ft to 82.4ft	18.4ft to 69.6ft	18.4ft to 44ft	18.4ft

● : Rope socket ■ : Weight M22239E

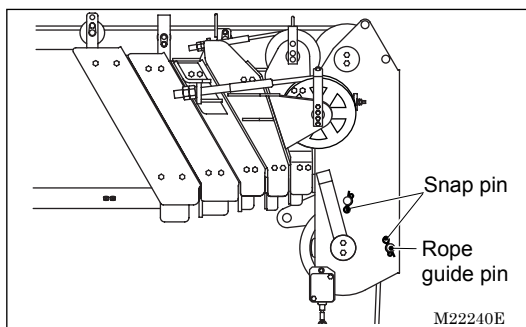
◆ The shaded sheave in the figure is optional.

(2) Reeving Procedure

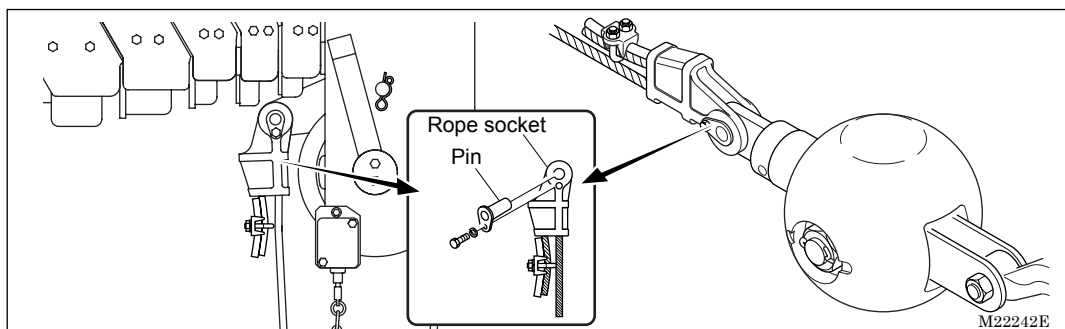
1. Extend the outriggers and stabilizers and set the boom in the desired direction.
2. Lower the boom all the way down and set the hook block on the ground.
3. Remove the weight for the anti-twoblock device from the wire rope.



4. Remove 2 rope guide pins from the boom head.

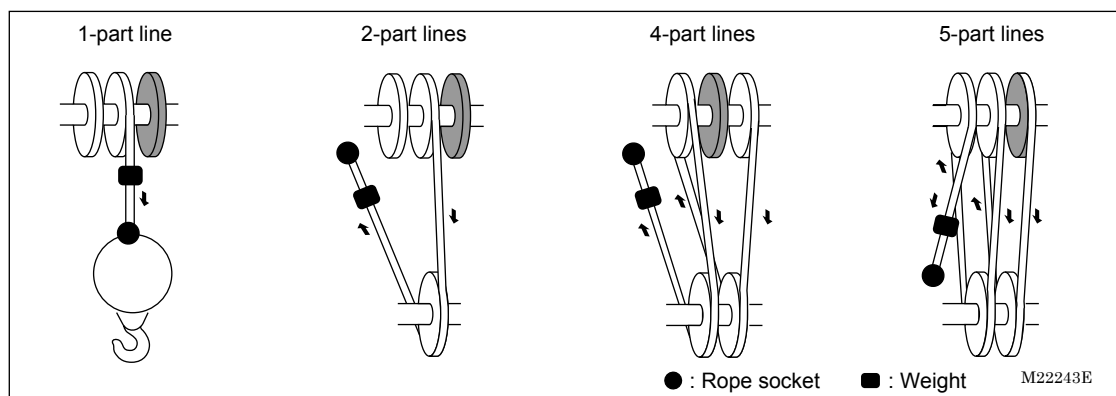


5. Remove the rope socket from the boom head or hook block.



6. Reeve the wire rope according the "Standard Number of Parts of Line" table.

◆If you must let out the wire rope, pull the rope out by hand while hoisting down with the winch in order to prevent improper winding. Wear protective gloves.



◆The shaded sheave in the figure is optional.

7. After reeving the wire rope, install the rope socket on the boom.

[NOTICE]

◆Use a wrench to tighten the mounting bolt of rope socket fixing pin.

8. Attach the weight for the anti-twoblock device.

9. Reinstall the 2 rope guide pins at the the boom head.

10. Raise the boom and hoist up with the winch to wind the rope around the drum.

◆The rope is often wound improperly when the wire rope is reeved without suitable tension on the line. Rewind the ropes if necessary.

2-15 Emergency Procedure

(1) When the Crane Cannot Be Operated

⚠ WARNING

- ⚠ The procedure described in this section is used to stow the crane in an emergency. Do not perform this procedure during normal crane operation.**
- ⚠ After this treatment, restore the swing brake valve to the original position. Otherwise the boom will swing freely during traveling and may hit surrounding objects.**

The following is the emergency procedure for stowing the crane when the crane does not operate due to an electrical or hydraulic system failure.

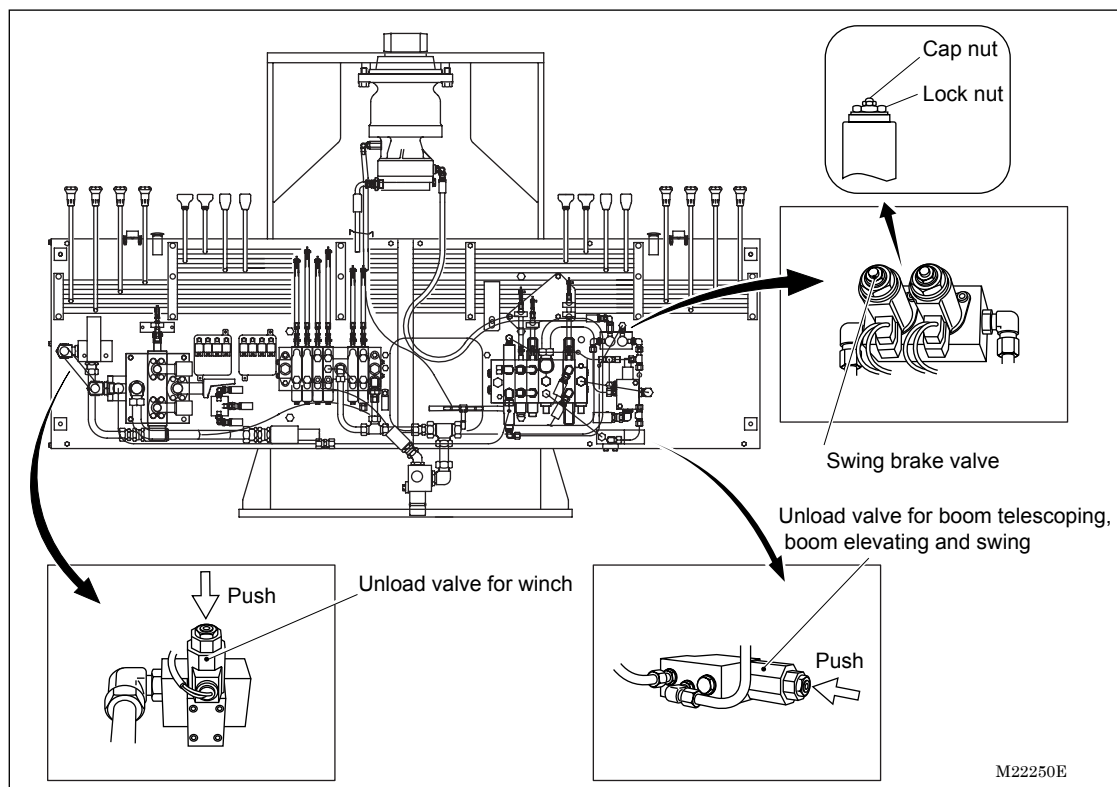
- 1-1.** Stow the crane while pressing the override switch.
- 1-2.** Have your crane repaired by your nearest TADANO dealer or distributor.
- 2.** If the crane does not move through the above procedure, perform the operation described below.

2-1. Operate the control lever while pushing in the tip of the unload solenoid of the corresponding valve using a screwdriver.

◆ When performing swing operation, release the swing brake by the following procedure:

(1) Remove the cap nut on the tip of the swing brake valve.

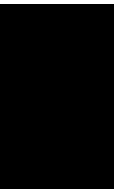
(2) Loosen the lock nut and lightly tighten the inside screw until it turns no more.



◆ Excessively tightening the inner nut causes malfunction.

2-2. Stow the crane, and contact your nearest TADANO dealer or distributor for inspection and repair.

3. INSPECTION AND MAINTENANCE



3-1 Inspection and Maintenance

Proper inspection and maintenance helps ensure safety and prolongs the life of your crane. To keep your crane in peak condition and maintain optimum performance, inspect and service it at the recommended intervals. In this way, you can prevent failures and detect problems in their early stages.

- ◆ The inspection intervals are based on the assumption that the crane is used under normal operating conditions. If it is used under severe or unusual conditions, shorten the intervals accordingly.
- ◆ If you are unable to perform any inspection and maintenance work yourself, contact your nearest TADANO distributor or dealer for assistance.

Pre-operational inspection		Perform before start of each day's operation.
Inspection and maintenance intervals	100 hours or 1 month	Perform every 100 hours or once a month.
	300 hours or 3 months	Perform every 300 hours or every 3 months.
	600 hours or 6 months	Perform every 600 hours or every 6 months.
	1,200 hours or 1 year	Perform every 1,200 hours or once a year.
	2,400 hours or 2 years	Perform every 2,400 hours or every 2 years.

Safety Parts Requiring Regular Replacement

Some components of your machine use parts which wear with time.

The following table gives the replacement intervals for the major safety parts whose defect can cause a serious accident. Contact your nearest TADANO distributor or dealer to have these parts replaced at the regular intervals.

Safety parts requiring regular replacement	Interval
Boom telescoping wire ropes	4 years

- ◆ If any of these parts are found defective, replace them even it is before the scheduled time of the replacement.
- ◆ Failure of regular replacement will lead to a defect of the machine and the warranty may be voided in such a case.

3-2 Pre-Operational and Periodic Inspection

⚠ WARNING

⚠ If you neglect pre-operational and periodic inspections, you will not be able to detect problems in their early stages or prevent consequent accidents. Make it a habit to perform the recommended pre-operational and periodic inspections. If you find any abnormality, take corrective action immediately.

System/Component		Check point	Pre-operational inspection	Periodic inspection	
				100 hrs	1 month
Power transmission system	PTO	Installation, external appearance		●	
		Operation (abnormal sounds, overheating), oil leaks	●	●	
		Worn or deformed link and pin		●	
	Propeller shaft	Installation (bolts loosened, etc.)	●	●	
		Run out, worn splines		●	
Hydraulic system	Hydraulic pump	Installation		●	
		Operation (abnormal sounds, overheating, trapped air, etc.), oil leaks	●	●	
	Hydraulic oil tank	Oil level, contamination, oil leaks	●	●	
		External appearance (cracks, deformation, etc.)	●	●	
		Clean strainers and air breathers		●	
Swing system	Motor, speed reducer	Installation, external appearance (cracks, deformation, loosened cover, etc.)	●	●	
		Operation, oil leaks	●	●	
	Swing bearing	Installation, external appearance (wear)		●	
		Swing motion	●	●	
Boom elevating system	Boom elevating cylinder	Installation, external appearance (deformation, flaws, etc.)		●	
		Operation, oil leaks	●	●	
		Spontaneous retraction		●	
Boom telescoping system	Boom telescoping cylinder	Installation, external appearance (cracks, deformation, etc.)		●	
		Operation (vibration, abnormal sounds, etc.), oil leaks	●	●	
		Worn slide plates		●	
	Wire rope	Sag, installation		●	

System/Component		Check point	Pre-operational inspection	Periodic inspection	
				100 hrs	1 month
Hoisting system	Winch	Installation, external appearance (cracks, deformation, etc.)		●	
		Operation, oil leaks, oil quantity	●	●	
		Function of brake	●	●	
	Wire ropes, sheaves	Installation (rope socket, wedges)	●	●	
		External appearance (deformation, rust, wear, etc.)	●	●	
		Function		●	
Crane control system	Operating controls	Movement of each lever	●	●	
		Movement of accelerator	●	●	
	Selector valves	Installation (bolts and nuts loosened)		●	
		Operation, oil leaks	●	●	
		Relief valve opening setting, condition of seal		●	
Safety device	AMA	Installation, external appearance		●	
		Operation	●	●	
	Anti-twoblock device	Installation, external appearance (cord reel, wiring), operation (buzzer, cord reel winding condition)	●	●	
	Horn	Operation	●	●	
	Cylinder holder valve	Installation		●	
		Function, oil leaks	●	●	
Alarm	Function (buzzer)	●	●		
Crane supporting and positioning device	Outriggers, stabilizers	Installation, external appearance (cracks, deformation, etc.)	●	●	
		Operation (abnormal sounds, vibration, etc.), oil leaks	●	●	
		Jack cylinder spontaneous retraction or extension		●	
Hook		External appearance (flaws, deformation, etc.)		●	
		Operation	●	●	
		Function of safety latch	●	●	

System/Component		Check point	Pre-operational inspection	Periodic inspection	
				100 hrs	1 month
Other devices	Piping and hoses	Oil leaks	●	●	
		Contact, torsion, deformation, cracks	●	●	
		Supports looseness		●	
	Lubrication	Lubricate grease nipples	●	●	
		Lubricate wire ropes, sheaves, slide plates	●	●	
	Mounting section	Looseness and external appearance (deformation, damage, etc) of crane body mounting bolts and nuts	●	●	
	Others	Chassis reinforcements installation	●	●	
		Bent or cracked chassis frame		●	
		Loosened bolts and nuts	●	●	

3-3 Greasing

[NOTICE]

◆ Mixing different brands of grease together can change the properties of the grease and have an adverse effect on the machine. When you add grease, be sure to use the brand that is in the machine.

If a different brand of grease must be used, remove all the remaining grease before adding the new grease.

◆ Dust in the grease causes premature wear of sliding surfaces, and consequently, shortens the life of the crane. Always clean grease nipples and other surfaces before applying grease. The wire rope should be cleaned using a wire brush, compressed air, etc., before it is greased.

◆ Lubricating wire ropes with an improper gear oil, cup grease or waste oil only shortens their life. Use rope grease or other grease that has properties suitable for wire ropes.

◆ In addition to the areas listed in the "Maintenance Table", the following items should also be lubricated with grease to protect them from rusting and to ensure smooth movement.

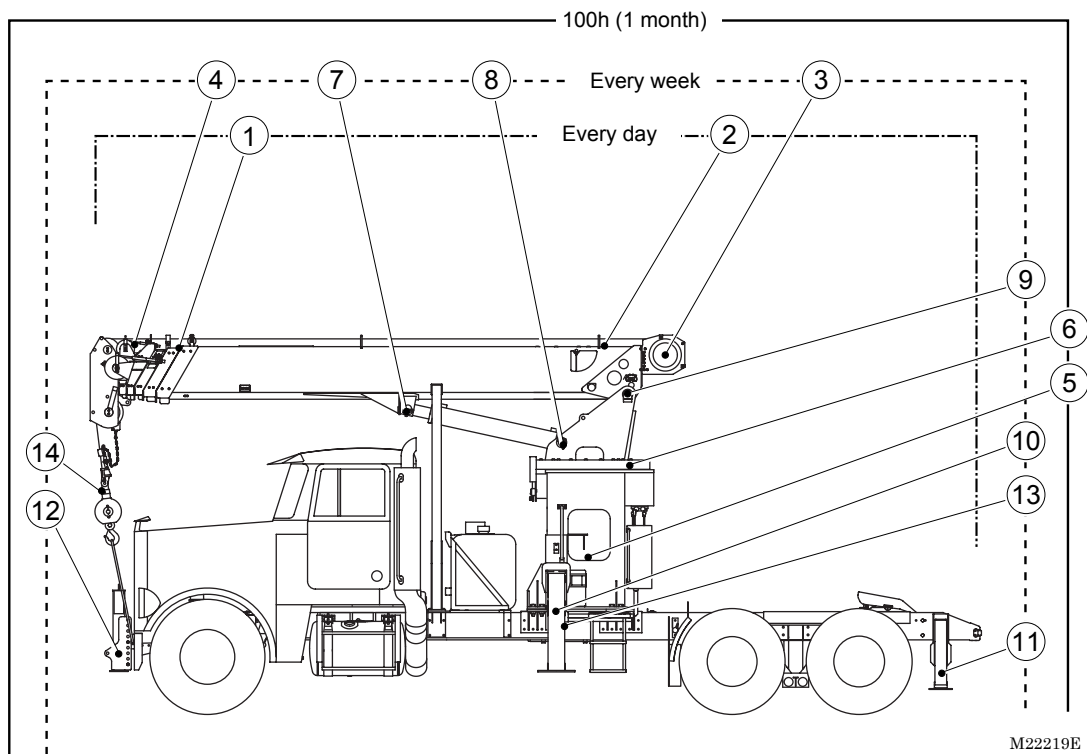
- Hydraulic cylinder rods (boom elevating cylinder, jack cylinder, etc.) that are exposed to air when the cylinder is in a fully retracted position
- Links and sliding sections that have been coated with grease before shipment from the factory

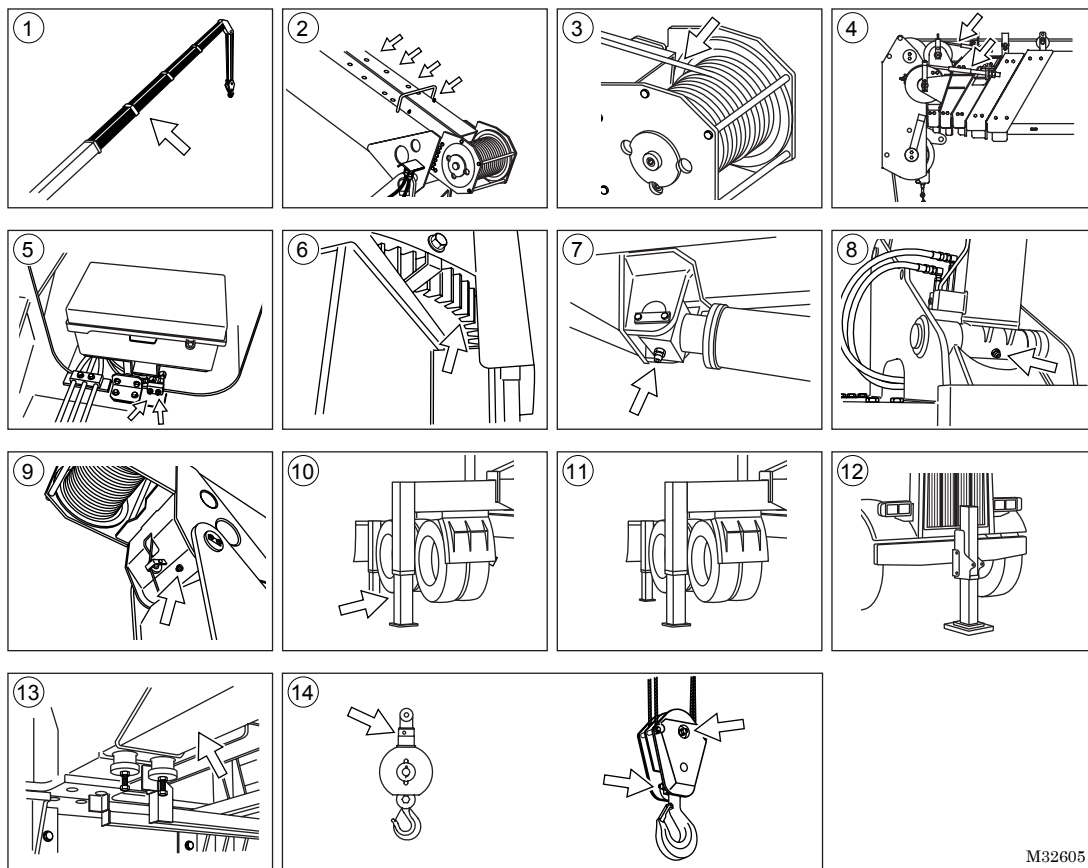
(1) Maintenance Table

◆ The quantity of No. 14 (grease nipple) varies depending on the hook to attach.

No.	Grease point and method		Number of points	Check interval			
				1 day	1 week	100hrs 1 month	
1	Side and bottom surface of boom	Coat	5 points	●			
2	Slide plates (top surface of boom)	Inject	10 points	●			
3	Wire rope (for winch)	Coat	1 point		●		
4	Wire rope (for boom telescoping)	Coat	4 points		●		
5	Swing bearing	Inject	2 points			●	
6	Swing gear	Coat	1 point			●	
7	Elevating cylinder upper pin	Inject	1 point		●		
8	Elevating cylinder lower pin	Inject	1 point		●		
9	Boom bottom pin	Inject	1 point		●		
10	Inner case of outrigger jack	Coat	2 points		●		
11	Inner case of rear stabilizer jack	Coat	2 points		●		
12	Inner case of front stabilizer jack	Coat	1 point		●		
13	Lower face of outrigger beam	Coat	2 points		●		
14	Hook block	Inject	1-2 points		●		

(2) Greasing Chart

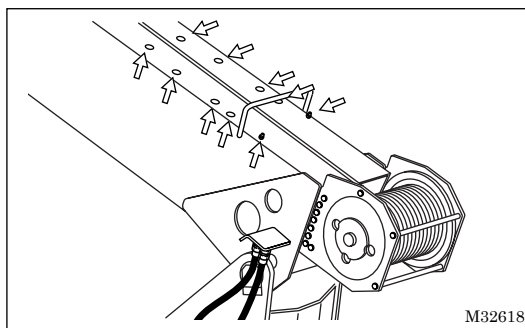




M32605

Slide Plates (Top Surface of Boom)

1. Extend the outriggers fully, extend the stabilizers and level the crane.
2. Fully retract the boom. Inject grease through the grease nipples on the upper side of the base boom section near the back end.



M32618

3-4 Gear Oil

⚠ CAUTION

⚠ The speed reducers are very hot immediately after operation. Let the speed reducers cool down until they can be touched with your bare hand before performing maintenance work on them.

[NOTICE]

◆ Mixing different brands of gear oil together can change the properties of the gear oil and have an adverse effect on the machine.

When you add gear oil, be sure to use the same brand that is in the machine. If a different brand of oil must be used, remove all the remaining gear oil before adding the new one.

◆ Before removing the plugs, clean their surroundings to prevent dust from entering.

◆ Before attaching the plugs, clean them up as well as the plug thread hole. Apply seal tape over the plug.

(1) Maintenance Table

No.	Component and required operation		Number of points/Quantity	Check interval					
				1 week	100 hrs	300 hrs	600 hrs	1200 hrs	
					1 month	3 months	6 months	1 year	
1	Winch speed reducer	Check oil level	1 point				●		
		Replace oil	1.4 gal {5.2L}(*1) 1.1 gal. {4.1L}(*2)			◎		●	
2	Swing speed reducer	Check oil level	1 point				●		
		Replace oil	0.32 gal. {1.2 L}			◎		●	

◎: First replacement only

(*1): For the machines with serial number 655678, and EX0043 and earlier

(*2): For the machines with serial number EX0044 and later

(2) Winch Speed Reducer Oil Level Check

· · · **Every 600 Hours or Every 6 Months**

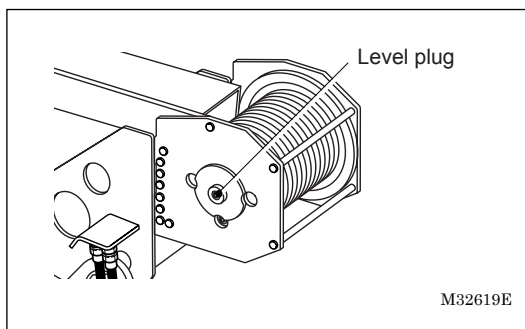
Winch Speed Reducer Oil Replacement

· · · **Every 1,200 Hours or Once a Year**

(Serial No. 655678 and --EX0043)

Checking Oil Level

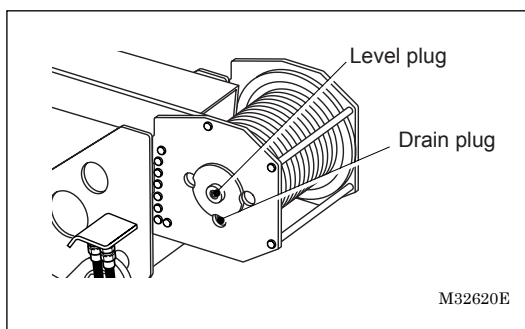
1. Place the crane on a level surface.
2. Remove the level plug and check the oil level. There is no need to add oil if the oil level comes to the bottom of the plug hole. If low, add oil through the level plug hole.
3. Install and tighten the level plug.



Replacing Oil

◆ Replace the oil within 300 hours or 3 months after the machine is delivered (whichever comes earlier); replace it every 1,200 hours or once a year thereafter.

1. Place the crane on a level surface.
2. Rotate the winch motor until the drain plug is oriented as shown in the figure.
3. Place an oil pan under the drain plug to catch the oil.
4. Remove the drain plug, level plug, and drain the oil.
5. After all of the oil has drained out, install and tighten the drain plug.
6. Pour fresh gear oil through the screw hole of the level plug until the oil level comes to the bottom of the level plug hole.
7. Install and tighten the level plug.



(3) Winch Speed Reducer Oil Level Check

· · · Every 600 Hours or Every 6 Months

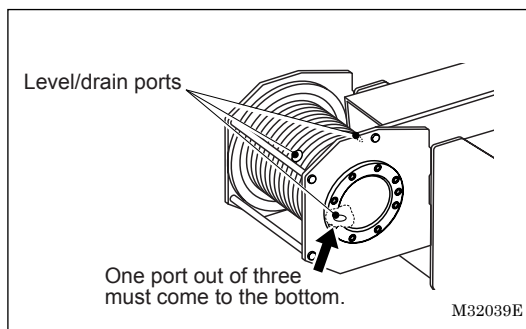
Winch Speed Reducer Oil Replacement

· · · Every 1,200 Hours or Once a Year

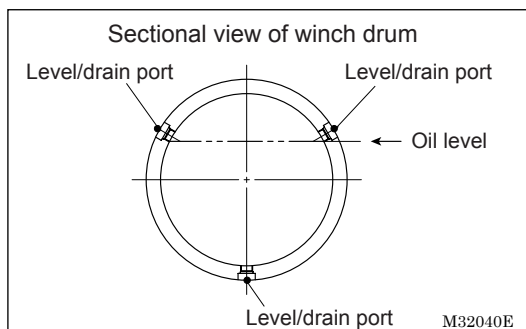
(Serial No. EX0044--)

Checking Oil Level

1. Place the crane on a level surface.
2. Detach the wire rope wound around the winch drum.
3. Rotate the winch drum until the level/drain ports are oriented as shown in the figure.
◆ Three level/drain ports are located in equal intervals.



4. Remove either of upper level/drain port, and check the oil level. There is no need to add oil if the oil level comes to the bottom of the port holes. If low, add oil through the level/drain port hole.



5. Install and tighten the level/drain port.
6. Wind up the wire rope around the winch drum.

Replacing Oil

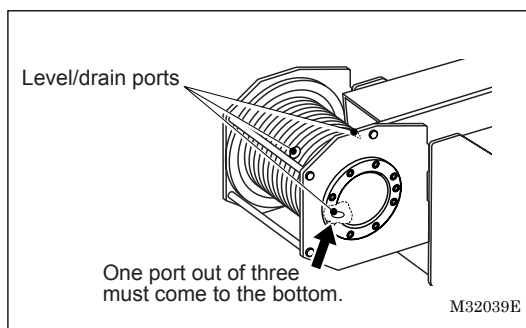
◆ Replace the oil within 300 hours or 3 months after the machine is delivered (whichever comes earlier); replace it every 1,200 hours or once a year thereafter.

1. Place the crane on a level surface.
2. Detach the wire rope wound around the winch drum.

3. Rotate the winch drum until the level/drain ports are oriented as shown in the figure.

◆ Three level/drain ports are located in equal intervals.

4. Place an oil pan under the level/drain port to catch the oil.

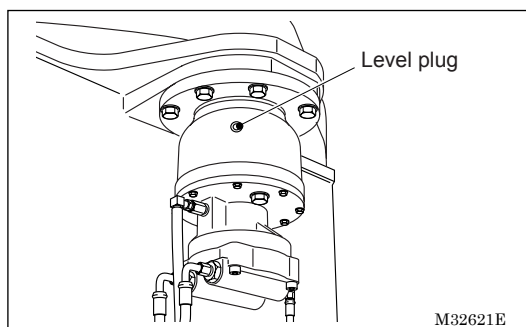


5. Remove the upper and bottom level/drain ports, and drain the oil.
6. After all of the oil has drained out, install and tighten the bottom level/drain port.
7. Pour fresh gear oil through the hole of the upper level/drain port until the oil level comes to the bottom of the level/drain port holes.
8. Install and tighten the upper level/drain port.
9. Wind up the wire rope around the winch drum.

(4) Swing Speed Reducer Oil Level Check

· · · Every 600 Hours or Every 6 Months

1. Place the crane on a level surface.
2. Remove the swing motors cover.
3. Remove the level plug and check the oil level. There is no need to add oil if the oil level comes to the bottom of the plug hole. If low, add oil through the level plug hole.



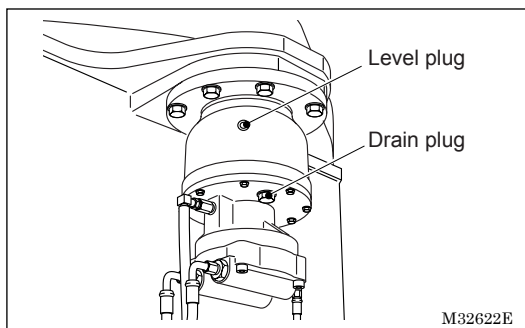
4. Install and tighten the level plug.

(5) Swing Speed Reducer Oil Replacement

· · · Every 1,200 Hours or Once a Year

◆ Replace the oil within 300 hours or 3 months after the machine is delivered (whichever comes earlier); replace it every 1,200 hours or once a year after that.

1. Place the crane on a level surface.
2. Remove the swing motors cover.
3. Place an oil pan under the drain plug to catch the oil.
4. Remove the drain plug, level plug, and drain the oil.



5. After all of the oil has drained out, install and tighten the drain plug.
6. Pour fresh gear oil through the screw hole of the level plug until the oil level comes to the bottom of the level plug hole.
7. Install and tighten the level plug.

3-5 Hydraulic System

⚠ CAUTION

⚠ The hydraulic oil and hydraulic equipment are very hot immediately after operation. Let them cool down before starting maintenance work on them.

[NOTICE]

◆ Using different brands of hydraulic oil together can change the properties of the oil and have an adverse effect on the machine. When you add hydraulic oil, be sure to use the brand that is in the machine. If a different brand of oil must be used, be sure to drain all the remaining hydraulic oil before refilling.

◆ Be sure to handle the hydraulic pipes carefully.

Handling them incorrectly can cause oil leaks or the hydraulic components to malfunction. Whenever you have to remove a pipe, be sure to consult your nearest TADANO distributor or dealer.

◆ Dust, foreign matter, water, etc. in the hydraulic oil tank or pipes could cause a machine failure. Keep these parts free of debris when working on them.

(1) Maintenance Table

No.	Component and required operation		Number of points/ Quantity	Check interval				
				1 day	300 hrs 3 months	600 hrs 6 months	1200 hrs 1 year	
1	Hydraulic oil tank	Check oil level	1 point	●				
		Replace oil	74 gal. {280 L} (*1)		◎		●	
			92.5 gal {350 L} (*2)					
2	Return filter	Replace	1 point		◎	●		
3	Air breather (hydraulic oil tank)	Replace	1 point			●		

(*1): Tank capacity (Refer to "Grease and Oil Table".)

(*2): Total capacity (Refer to "Grease and Oil Table".)

◎: First replacement only

(2) Oil Level Check (Hydraulic Oil Tank) · · · Once a Day

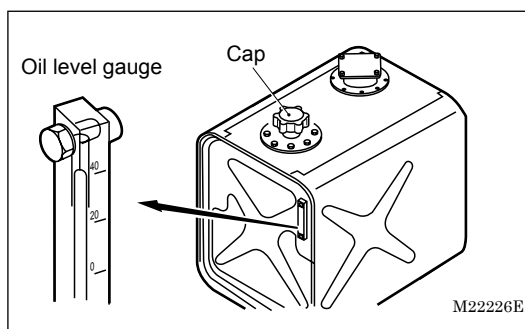
1. Stow the crane in the traveling configuration on level ground.
2. Check the oil level in the oil level gauge. The oil level gauge is marked taking into account the changes in oil volume according to temperature. Check if the oil level is between the "0°C" {30°F} mark and the mark that corresponds to the current oil temperature.

If the oil is low, remove the cap on the hydraulic oil tank and add oil through the filler port.

- Example -

When the current oil temperature is 20°C {70°F}, if the oil level is between the "20°C" {70°F} and "0°C" {30°F} marks, there is sufficient oil in the tank.

◆ When the oil temperature is 0°C {30°F} or lower, regard the "0°C" {30°F} mark as the proper level.



(3) Oil Replacement (Hydraulic Oil Tank)

· · · Every 1,200 Hours or Once a Year

[NOTICE]

◆ The hydraulic pump could be broken if it is operated with the hydraulic oil tank drained. Do not attempt to operate it until the hydraulic tank is filled with fresh oil.

◆ Replace the oil within 300 hours or 3 months after the machine is delivered (whichever comes earlier); replace it every 1,200 hours or once a year after that.

◆ Replace the return filters when the hydraulic oil is replaced.

1. Stow the crane in the traveling configuration on level ground.

2. Remove the cover from the filler port and use the oil pump to pump the hydraulic oil from the tank into an oil drum or other suitable container.

3. Remove the drain plug at the bottom of the tank to let out any remaining hydraulic oil.

4. Check the inside of the tank and clean if any dust or foreign matter is found.

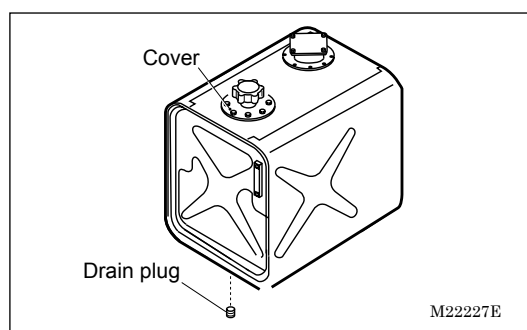
5. Clean the drain plug and wrap a sealing tape around it, then remount and tighten.

6. While watching the oil level on the level gauge, supply new hydraulic oil into the tank.

7. Remount the cover on the hydraulic oil tank.

8. Bleed the hydraulic pump.

9. Recheck the oil level. Add if low.

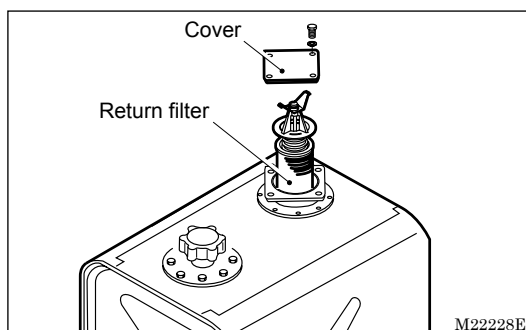


(4) Return Filter Replacement (Hydraulic Oil Tank)

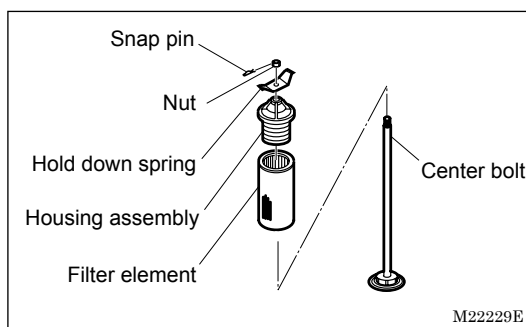
· · · Every 600 Hours or Every 6 Months

◆ Replace return filter after 300 hours or 3 months after the machine is delivered (whichever comes earlier); replace it every 600 hours or every 6 months after that.

1. Remove the top cover of the hydraulic oil tank and take out the return filter.



2. Remove the snap pin and then the nut from the return filter.



3. Replace the filter element with a new one and reassemble the return filter.

4. Install the return filter in the tank and remount the cover.

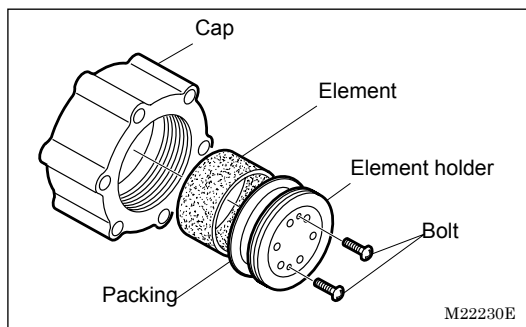
(5) Air Breather Replacement (Hydraulic Oil Tank)

· · · Every 600 Hours or Every 6 Months

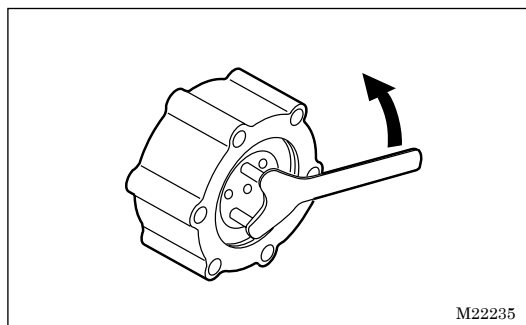
[NOTICE]

◆ When the air breather element is clogged, the hydraulic oil tank will be damaged. Be sure to replace the element periodically.

1. Unlock the air breather cap to remove it using a key.



2. Remove the two bolts, then use a wrench to remove the element holder, as shown in the figure. Replace the element with a new one.



3-6 Swing System

(1) Maintenance Table

No.	Component and required operation		Number of points/ Quantity	Check interval				
				1 week	100 hrs	600 hrs	1200 hrs	3600 hrs
					1 month	6 months	1 year	3 years
1	Swing bearing mounting bolt	Check	1 set		●		●	
2	Swing speed reducer mounting bolt	Check	1 set			●		

(2) Swing Bearing Mounting Bolt Check

- • • Every 100 Hours or Every 1 Month

Swing Speed Reducer Mounting Bolt Check

- • • Every 600 Hours or Every 6 Months

⚠ WARNING

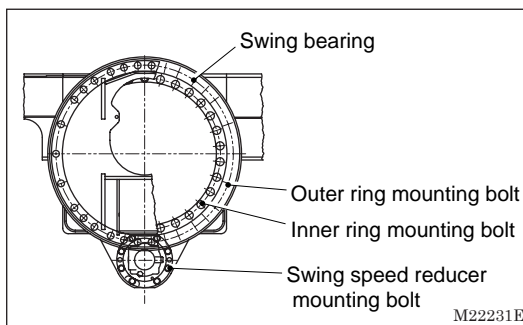
⚠ You are required to check the swing bearing mounting bolts periodically because they can sometimes come loose or be elongated.

If the machine is operated while the swing bearing mounting bolts have any abnormalities, the bolts can break off and cause the upper structure to come apart from the lower structure. This can result in a serious accident.

Be sure to check the swing bearing mounting bolts periodically to prevent such an accident.

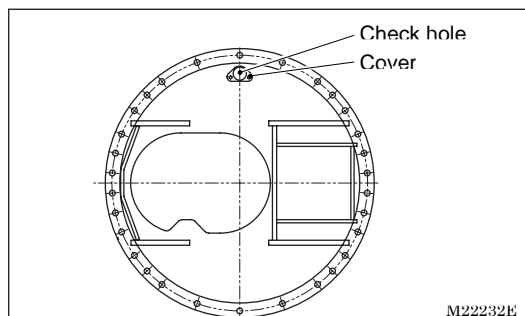
Check the swing bearing mounting bolts one by one.

Tightening torque (bearing inner ring bolts)	463 to 495 ft-lb {628 to 672 N·m}
Tightening torque (bearing outer ring bolts)	344 to 372 ft-lb {466 to 505 N·m}
Tightening torque (swing speed reducer mounting bolts)	275 to 305 ft-lb {372 to 412 N·m}



Inner Ring Mounting Bolt

1. Remove the cover on the side of the swing post.

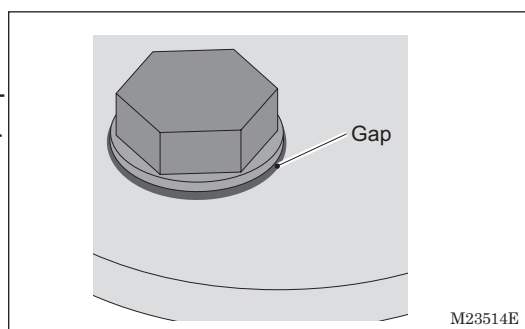


2. Swing the table so that a mounting bolt comes to the center of the check hole.

To be checked at the regular self-inspection (monthly)

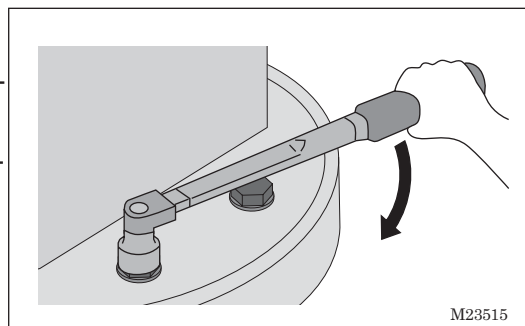
Check the swing bearing mounting bolts for any abnormalities (looseness, elongation, rusting, breakage, or dropping off). For the looseness and elongation of the bolts, visually check the gap between the bolt and mounting surface.

Also, check the looseness using a test hammer.



To be checked at the regular self-inspection (yearly)

Check the swing bearing mounting bolts for any abnormalities (looseness, elongation, rusting, breakage, or dropping off). Also, have the tightening torque checked using a torque wrench by your nearest TADANO distributor or dealer.



If any abnormalities are found

If any of the swing bearing mounting bolts are loose, re-tighten them to the specified torque. If any one of the bolts has abnormalities other than the looseness, have all the bolts replaced by your nearest TADANO distributor or dealer. When the bolts are replaced, make sure that torque control agent is applied to the threads of the bolts, and the bolts are tightened to the specified torque.

3. After inspection is completed, mount the cover to the original position.

Outer Ring Mounting Bolt

Swing the boom so that a bearing outer ring mounting bolt is positioned at side of carrier and inspect the mounting bolt.

◆Checking procedure is the same as that of the inner ring.

3-7 Electrical System

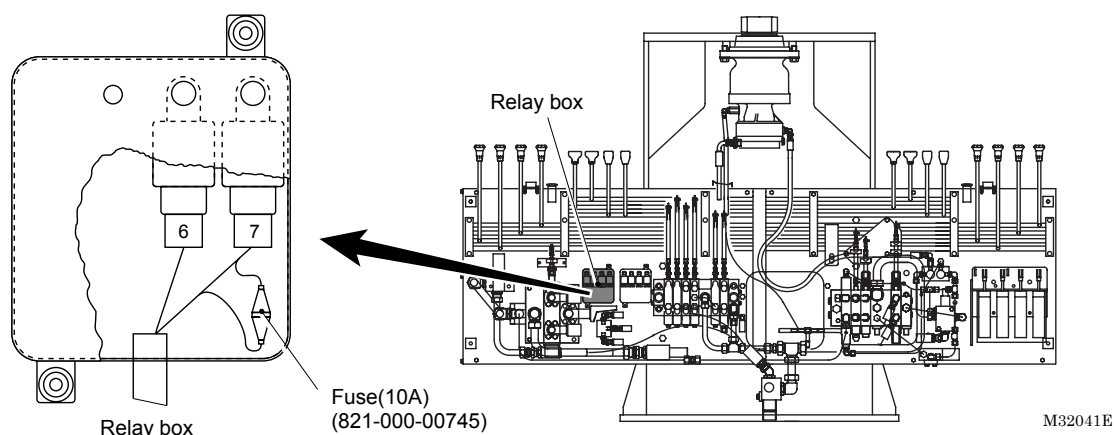
(1) Maintenance Table

No.	Component and required operation	Interval
1	Fuse Replace	When fuse blows

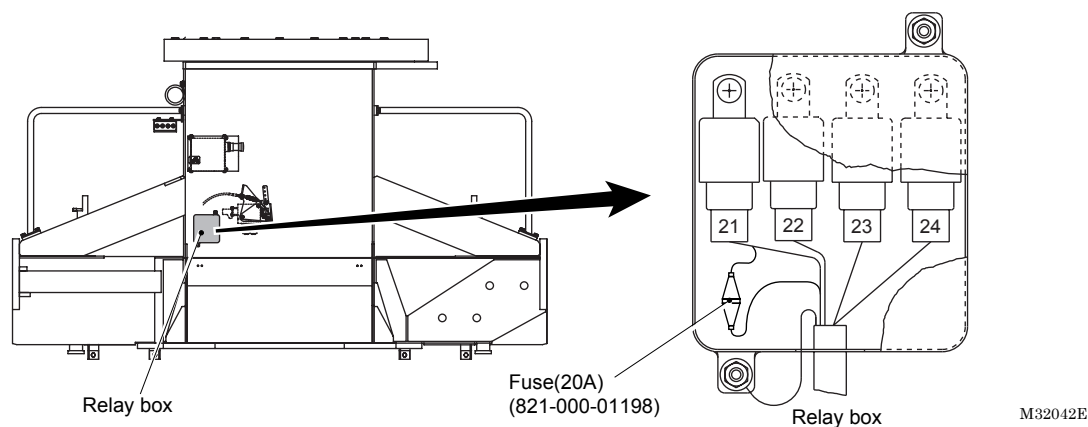
(2) Fuse Replacement

[NOTICE]

- ◆ When replacing fuses, set the starter switch to OFF to prevent a short circuit.
- ◆ If a fuse with capacity exceeding designation is used, it may lead to wiring or other appliance burning down when blown out. Use specified replacement fuses.



- ◆ Only for the radio control specification



3-8 Frame

(1) Maintenance Table

No.	Component and required operation		Number of points/ Quantity	Check interval				
				1 week	100 hrs	300 hrs	600 hrs	1200 hrs
					1 month	3 months	6 months	1 years
1	Crane mounting bolt and nut	Check	4 points		●			

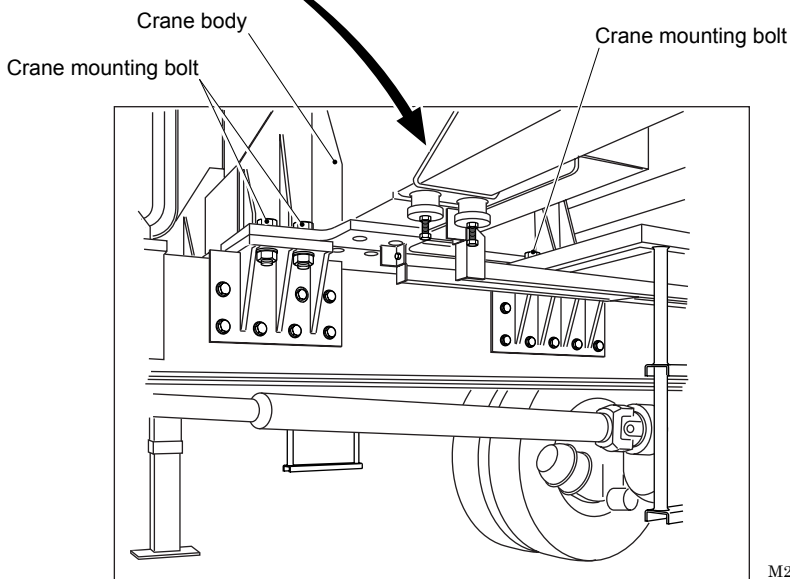
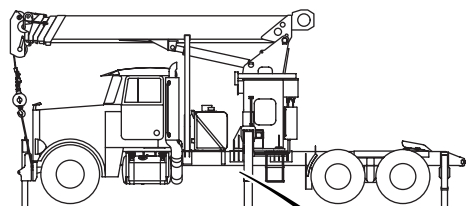
(2) Crane Mounting Bolt and Nut Check

..... Every 100 Hours or Once a Month

⚠ WARNING

⚠ If the nuts for the crane mounting bolts come loose, the crane will list or chassis frame will be damaged, resulting in a serious accident. Check the bolts, nuts and related parts at regular intervals. If any abnormalities are found, have your nearest TADANO distributor or dealer repair them.

Tightening torque	990–1210 ft·lb {1341–1639 N·m}
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M22260E

3-9 Wire Ropes

(1) Proper Handling of Wire Ropes

⚠ CAUTION

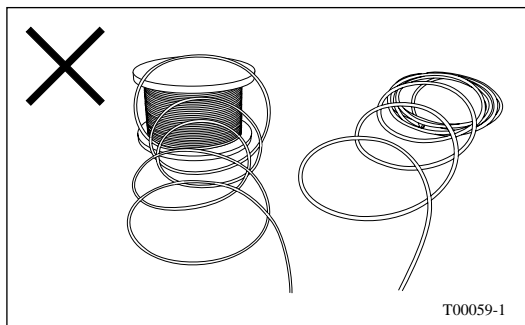
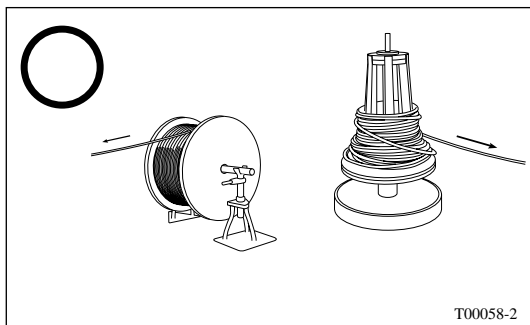
⚠ Do not handle wire ropes with your bare hands. Always wear leather gloves when handling the wire ropes; otherwise you will be injured.

Always handle wire ropes carefully and correctly. The life of wire ropes can be maximized if they are handled correctly. If handled improperly, they become deformed or lose their original strength, and must be replaced prematurely.

How to Unwind Wire Rope

Wire rope is wound in a coil or around a wooden bobbin when supplied. Unwind the wire rope by rolling the coil, or pull out the rope while rotating the bobbin.

If the wire rope is unwound improperly, it may become twisted or have kinks, rendering it unusable. Even the slight added twist may cause the wire rope to become tangled.



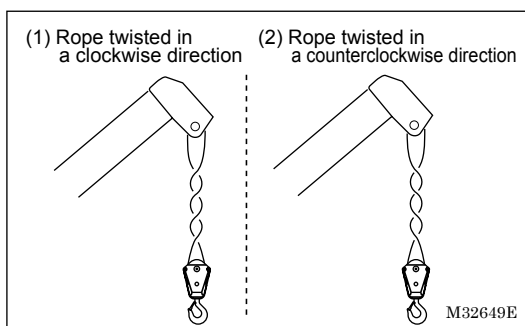
Disentangling Wire Rope Parts

If a new wire rope is used, a coiling effect may be created, causing the rope to become tangled.

This is dangerous because it will cause the hook block or load to rotate.

Disentangle the rope as follows:

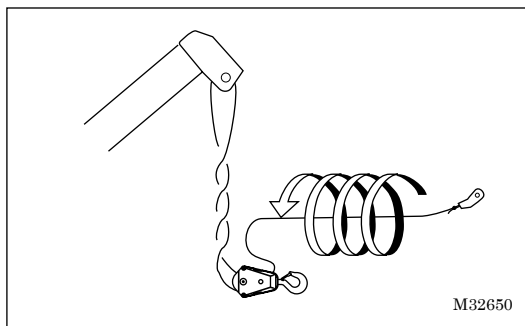
1. Let out the wire rope until only a few wraps of rope are left on the winch drum, and check the direction and number of twists.



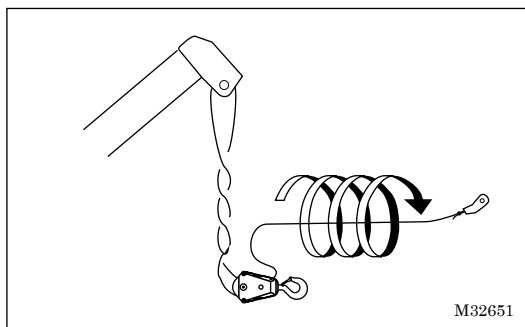
2. Remove the rope socket from the boom, eliminate the twists as described below, then remount it.

◆ If there are many twists, correct the rope in stages. Do not twist or untwist the rope more than four turns at a time.

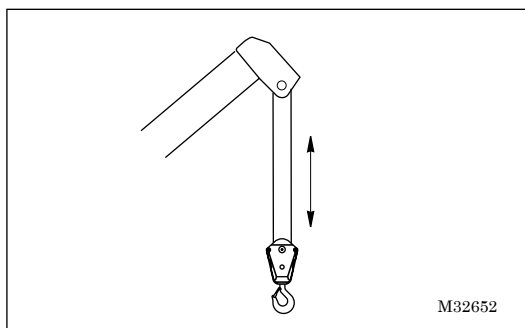
(1) If the rope is twisted in a clockwise direction, twist the rope further (e.g., turn it in the same direction as the twist).



(2) If the rope is twisted in a counterclockwise direction, untwist the rope (e.g., turn it in the opposite direction of the twist).



3. Hoist the hook block up and down several times to distribute any remaining twists evenly throughout the rope. If, after this, twists still remain, correct again.



Correcting the Torsion of the Wire Rope


[NOTICE]

◆ Wire ropes may lose their structural elongation and be untwisted with use. Using such wire ropes for a long time can lead torsion to gather at the rope ends, damaging the wire ropes. To settle twisting condition of the wire rope, re-reeve the wire ropes regularly to remove the torsion on the rope ends. It is essential for a while after the wire rope has been replaced.

(2) Wire Rope Replacement

Criteria for Replacing Wire Ropes

WARNING

 If a wire rope breaks during operation, a serious accident could occur. Check the wire ropes at regular intervals. Wire ropes that do not meet even one of the criteria given below should be replaced immediately.

Perform routine and periodic (monthly) inspections on the wire ropes for breaks, wear, corrosion, deformation, arcing or heat effects, oil coat condition, and rope end condition. If any of the following conditions (1) through (5) are found, replace the wire rope.

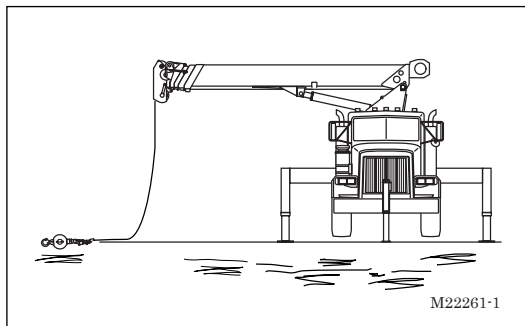
◆ If the end of wire rope is not in proper condition, repair or cut.

1. In running ropes: six randomly distributed broken wires in one lay, or three broken wires in one strand in one lay.
2. Wear of one-third of the original diameter of outside individual wires. Evidence of kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
3. Evidence of any heat damage from any cause.
4. Reductions from nominal diameter of more than:
 - 1/64 inch for diameters up to and including 5/16 inch
 - 1/32 inch for diameters 3/8 to 1/2 inch inclusive
 - 3/64 inch for diameters 9/16 to 3/4 inch inclusive
 - 1/16 inch for diameters 7/8 to 1-1/8 inches inclusive
 - 3/32 inch for diameters 1-1/4 to 1-1/2 inches inclusive
5. In standing ropes: more than two broken wires in one lay in sections beyond end connections, or more than one broken wire at an end connection.

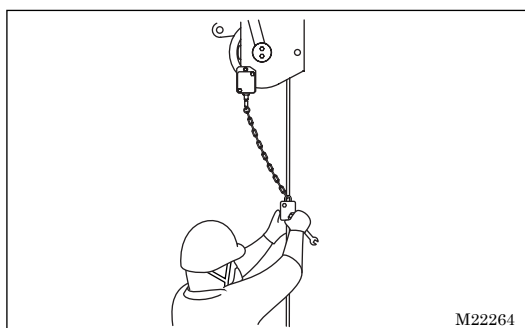
Removing Wire Rope

1. Set the outriggers and stabilizers, and place the boom in an over-side area.

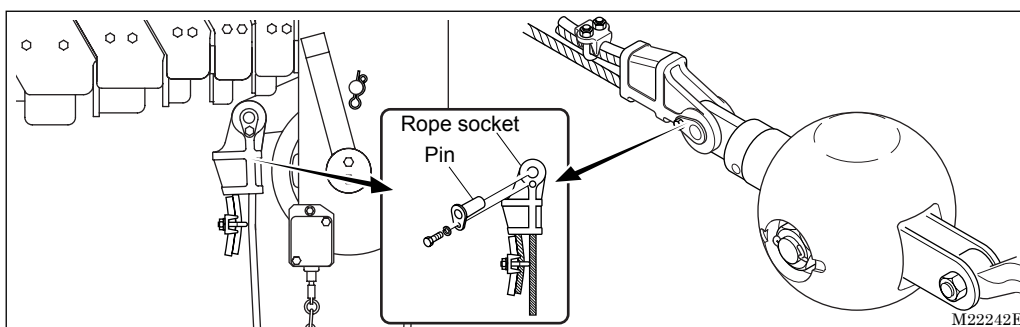
2. Fully lower the boom and lay the hook block on the ground.



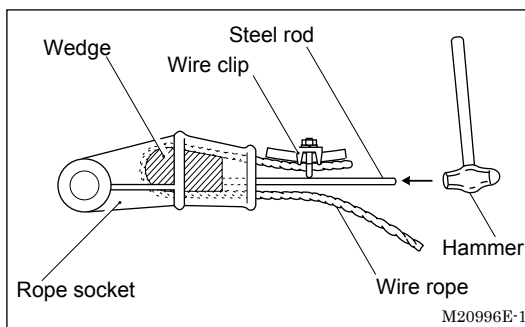
3. Remove the weight of the anti-two-block device.



4. Remove the rope socket.



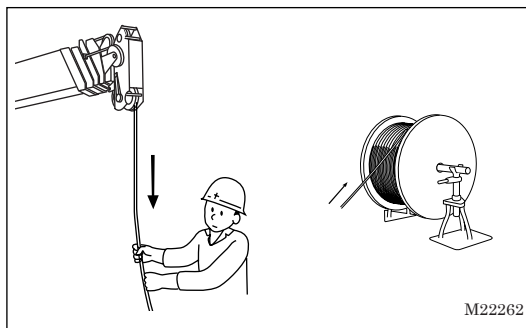
5. Detach the wire rope from the rope socket by removing the wire clip, then hammering the wedge out of position.



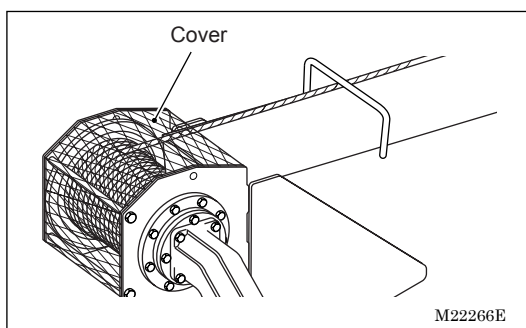
6. If a hook other than the single-line type is employed, remove the wire rope from the hook.

7. Wind the wire rope around a wooden bobbin while hoisting down with the winch.

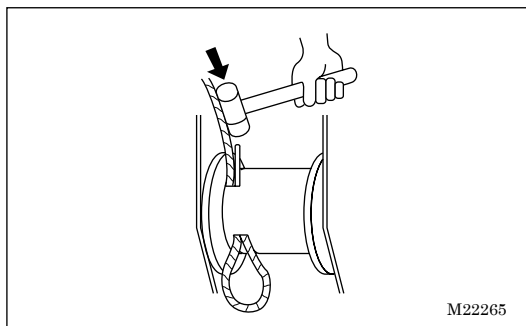
◆ Pull on the wire rope as you let it out to prevent improper winding.



8. Remove the winch cover.

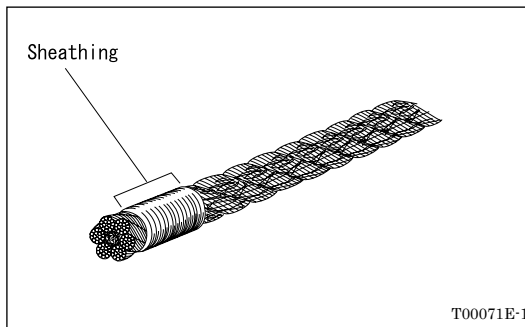


9. When there is no wire rope left on the winch drum, hammer the wedge out of the winch drum to release the remaining wire rope.



Installing of Wire Rope

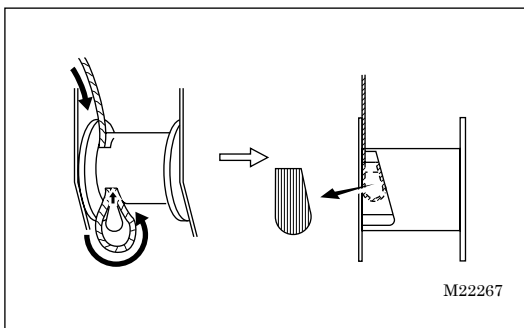
◆When you cut a wire rope or apply treatment to the ends, wrap the cut or treated ends with sheathing to prevent the strands from coming loose. Use an annealed low carbon steel wire covered with zinc plating. Wrap it around the wire rope. The width of the sheathing should be two or three times the diameter of the rope.



Wire rope diameter	Sheathing wire diameter
1/2" or more but less than 11/16" {12 mm or more but less than 18 mm}	0.039" {1.0 mm}

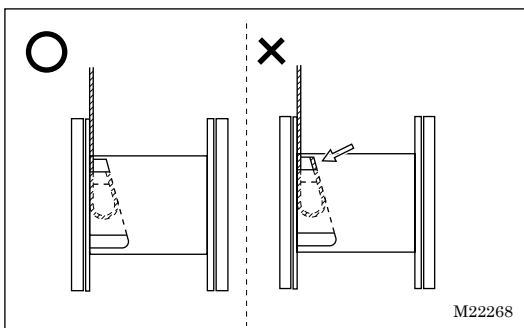
1. Pass new wire rope from the boom head to the winch drum.

◆Be sure to route the rope correctly.



2. Secure the end of the wire rope to the winch drum with the wedge.

◆The wedge must be oriented correctly. Make sure that the end of the wire rope does not protrude from the edge of the winch drum.



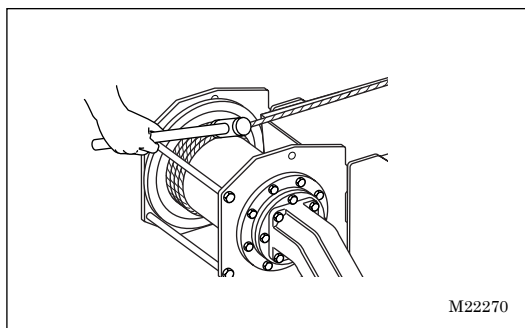
3. Operate the winch to wind up the rope around the drum having only enough rope for attaching it to the hook block.

◆ Wind the rope slowly while applying it some tension to prevent improper winding.

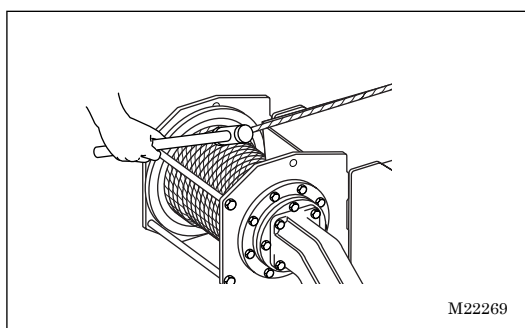
◆ Pay attention to the following when winding the rope:

(1) The first wrap must be wound along the guide at the end of the drum.

(2) The drum is not grooved. In the first layer of wraps, wind in the wire rope, hammering it lightly to prevent disorderly winding.

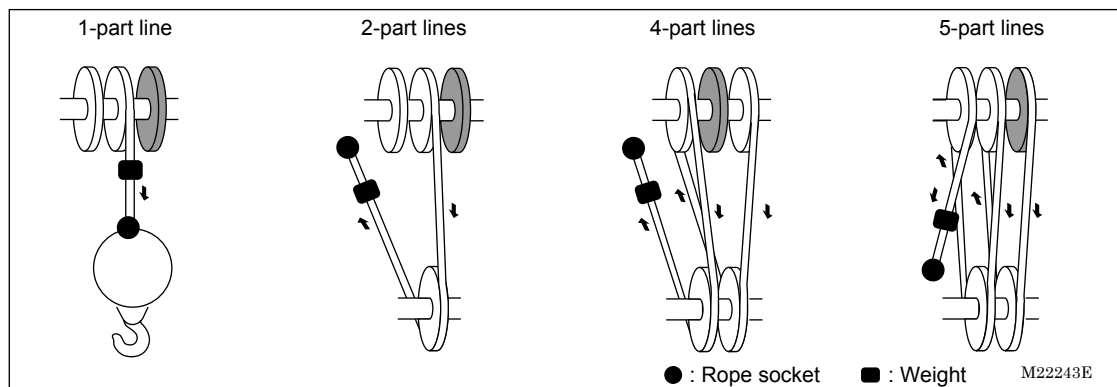


(3) When winding over a layer of wraps, the rope should be set in the valleys between the wraps.



4. Pass the wire rope through the boom top sheaves, the hook sheaves and the anti-twoblock device weight as shown.

◆ Take care of the orientation of the hook. The side on which the weight holder lies is the anti-twoblock device weight side.



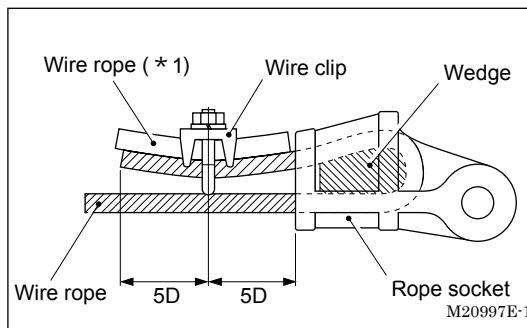
◆ The shaded sheave in the figure is optional.

5. Pass the wire rope through the rope socket and secure it to the socket with the wire clip.

◆Be sure to insert the wedge and attach the wire clip in the proper orientations.

D : Wire rope diameter

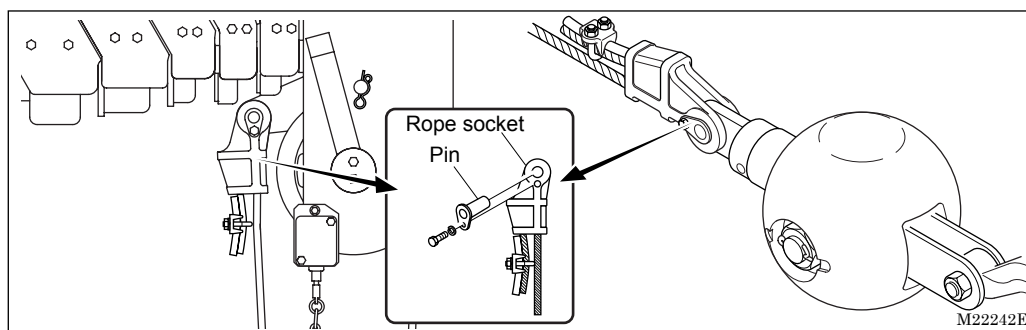
*1 : Cut the wire rope in 10D length.



6. Secure the rope socket.

[NOTICE]

◆Use a wrench to tighten the mounting bolt of rope socket fixing pin.



After Replacing Wire Rope

◆ A new wire rope is prone to disorderly winding. Check the rope on the winch drum from time to time. If it is disorderly wound, rewind it neatly.

◆ When first using a new wire rope, lift light loads at low speeds in order to settle the strands. This helps prolong the life of the wire rope.

When the wire rope is replaced, the new wire rope wound around the winch drum does not have the proper tension. If a load is hoisted with the rope at improper tension, the wrap in an outer rope layer will become wedged between the wraps in an inner layer, possibly deforming the wire rope, or causing improper winding, broken wires, etc. Before actually lifting a load, apply the proper tension to the wire rope and rewind as follows:

- 1.** Extend the boom, and unwind the wire rope until about three wraps are left on the winch drum.
- 2.** Suspend a load to give tension to the wire rope and then wind the rope tightly around the winch drum. The load to be suspended must be within the rated lifting capacity.

MEMO

4. INFORMATION AND DATA



4-1 Conversion

NOTE:

Units (length, volume, mass, etc.):

Both the US system (main) and the metric system (supplementary) are used, with corresponding values for the latter system given in (). For reference, conversion tables are provided.

Length Conversion Table

millimeter, mm	centimeter, cm	meter, m	inch, in, "	foot, ft, '
1	0.1	0.001	0.03937	0.00328
10	1	0.01	0.3937	0.03281
1000	100	1	39.37	3.281
25.40	2.540	0.0254	1	0.08333
304.8	30.48	0.3048	12	1

mile, mi	kilometer, km
1	1.6093
0.6214	1

Area Conversion Table

square millimeter, mm ²	square centimeter, cm ²	square meter, m ²	square inch, in ²	square foot, ft ²
1	0.01	0.000001	0.00155	
100	1	0.0001	0.155	0.001076
1000000	10000	1	1550	10.764
645.2	6.452	0.000645	1	0.006944
92903.0	929.03	0.09290	144	1

Volume Conversion Table

cubic centimeter, cm ³ , cc	cubic meter, m ³	cubic inch, in ³	cubic foot, ft ³	gallon, gal	cubic inch, in ³	liter, lit, L
1	0.000001	0.0610	0.0000353			
1000000	1	61024	35.31	1	231	3.785
16.39	0.0000164	1	0.000579	0.004329	1	0.01639
28320	0.02832	1728	1	0.2642	61.02	1

Weight Conversion Table

gram, g	kilogram, kg	ounce, oz	pound, lb	metric ton, ton, t	short ton, s. t
1	0.001	0.03527	0.0022		
1000	1	35.27	2.205	0.001	0.001102
28.349	0.02835	1	0.0625	0.00002835	0.00003125
453.592	0.4536	16	1	0.0004536	0.0005
1000000	1000	35274	2205	1	1.102
907185	907.2	32000	2000	0.9072	1

Pressure Conversion Table

bar	kgf / cm ²	lb / in ² , psi
1	1.0197	14.50
0.9807	1	14.22
0.06895	0.07031	1

Work, Energy Conversion Table

kgf-cm	kgf-m	foot-pound, ft-lb	inch-pound, in-lb
1	0.01	0.0723	0.8681
100	1	7.233	86.81
13.83	0.1383	1	12
1.1525	0.01153	0.08333	1

Centigrade-Fahrenheit Conversion Table

°F	°C	°F	°C	°F	°C	°F	°C
-450	-267.78	-200	-128.89	5	-15.00	30	-1.11
-400	-240.00	-150	-101.11	10	-12.22	35	1.67
-350	-212.22	-100	-73.33	15	-9.44	40	4.44
-300	-184.44	-50	-45.56	20	-6.67	45	7.22
-250	-156.67	0	-17.78	25	-3.89	50	10.00

°F	°C	°F	°C	°F	°C	°F	°C
55	12.78	80	26.67	150	65.56	400	204.44
60	15.56	85	29.44	200	93.33	450	232.22
65	18.33	90	32.22	250	121.11	500	260.00
70	21.11	95	35.00	300	148.89	550	287.78
75	23.89	100	37.78	350	176.67	600	315.56

4-2 Major Specifications

Crane Performance

Maximum lifting capacity	36,000lbs.@5' (5-part lines)
Boom length	18.4'-82.3'
Boom extended speed	63.9'/approx.59s
Winch single line pull	7,200lbs.
Winch single line speed approx.	Approx. 250FPM (@3th layer) (*1)
	Approx. 280FPM (@3th layer) (*2)
Boom elevation angle	-7°-80°
Boom elevation speed	-7°-80°/approx.20s
Swing angle	375° non-continuous (*3)
	360° continuous (*4)
Swing speed	375°/approx. 38s

(*1): For the machines with serial number 655678, and EX0043 and earlier

(*2): For the machines with serial number EX0044 and later

(*3): For the 375° non-continuous swing specification

(*4): For the 360° continuous swing specification

Wire Rope Specifications

Configuration	IWRC 6 × WS(31)
Breaking strength	30,100 lbs.
Diameter × Length	9/16' × 279'

Chain Length of Overwind Cutout Device

22.44" (1.18" × 19Link)

Crane Weight

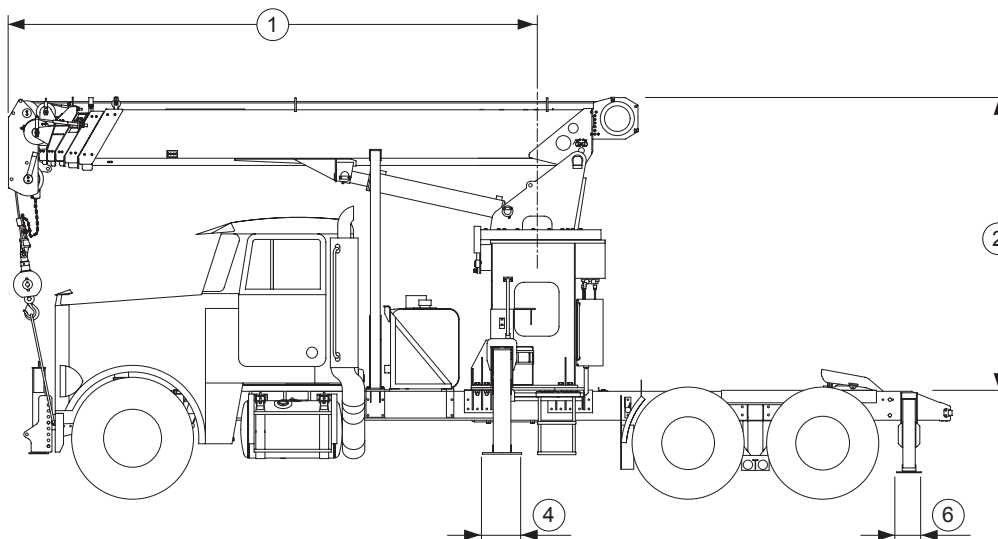
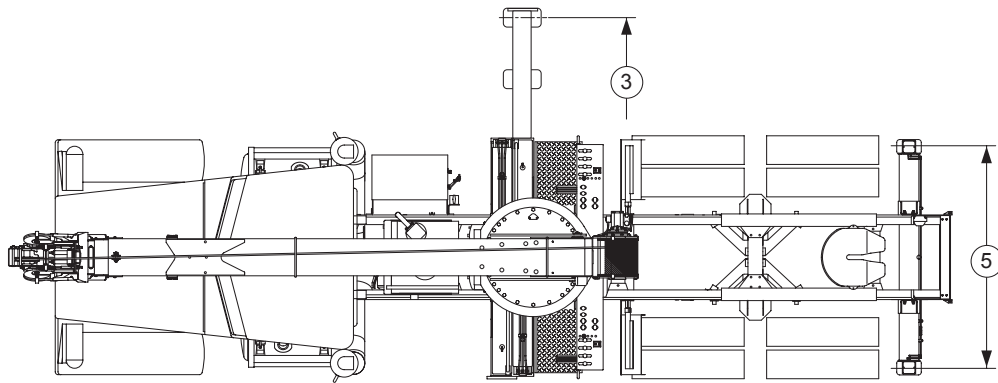
Approx 12,700 lbs. (crane bare)

Overall Dimensions

1. Center of rotation - boom tip	210.8"
2. Lower face of mounting seat - upper face of boom	118.1"(*1)
	109.8"(*2)
3. Minimum extension width	7.15'
Middle extension width	13.1'
Maximum extension width	18.7'
4. Outrigger float size	15.7"x11.4"
5. Rear stabilizer span	7.38'
6. Rear stabilizer float size	9.8"x5.9"

(*1): For the machines with serial number 655678, and EX0043 and earlier

(*2): For the machines with serial number EX0044 and later



M22284E

4-3 Greases and Oils

(1) Grease and Oil Table

The greases and oils listed below are used in new cranes at shipment.

Grease or oil	No.	Component	Brand (manufacturer)	Capacity/Quantity
Grease	1	Side and bottom surfaces of boom	TNR	As required
	2	Slide plates (top surface of boom)	(TADANO Genuine)	
	3	Wire rope (for winch)	Mobilarma 798	
	4	Wire rope (for boom telescoping)	(Exxon Mobil)	
	5	Swing bearing	Daphne Eponex Grease SR No. 2 (Idemitsu)	
	6	Swing gear		
	7	Elevating cylinder upper pin		
	8	Elevating cylinder lower pin		
	9	Boom bottom pin		
	10	Inner case of outrigger jack		
	11	Inner case of rear stabilizer jack		
	12	Inner case of front stabilizer jack		
	13	Lower face of outrigger beam		
	14	Hook block		
Gear oil	1	Winch speed reducer	Texaco Meropa 220 (Texaco)	1.4 gal. {5.2 L} (*1)
			Mobilgear 600XP 220 (Exxon Mobil)	1.1 gal. {4.1 L} (*2)
	2	Swing speed reducer	Mobilgear 600XP 320 (Exxon Mobil)	0.32 gal. {1.2 L}
Hydraulic oil	1	Hydraulic oil tank (TADANO Genuine)	TADANO Hydraulic Oil LL (TADANO Genuine)	74 gal. {280 L} (*3) 92.5 gal. {350 L} (*4)

(*1): For the machines with serial number 655678, and EX0043 and earlier

(*2): For the machines with serial number EX0044 and later

(*3): Tank capacity

(*4): Total capacity

(2) Recommended Oils and Greases

◆When replacing oils and greases, use the oils and greases used at shipment.

If a different brand must be used, refer to the following tables.

Hydraulic Oils

Component Type	Hydraulic oil tank		
	ISO VG46	ISO VG32	ISO VG22, VG15
Ambient temperature	23°F to 77°F (-5°C to 25°C)	14°F to 59°F (-10°C to 15°C)	
Operating temperature range	32°F to 158°F (0°C to 70°C)	23°F to 140°F (-5°C to 60°C)	
Allowable temperature range	23°F to 176°F (-5°C to 80°C)	14°F to 158°F (-10°C to 70°C)	
TADANO Genuine	TADANO Hydraulic Oil LL		
Idemitsu	Daphne Super Hydro 46A	Daphne Super Hydro 32A	Daphne Super Hydro 22WR
Shell	Shell Tellus Oil 46	Shell Tellus Oil 32	—————
Esso		Nuto H32	Nuto H15
Exxon Mobil	Mobil DTE25	Mobil DTE24	Mobil DTE11

Gear Oils

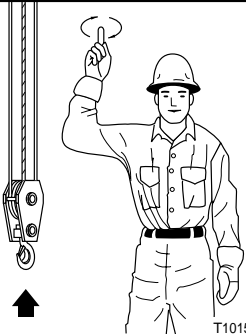
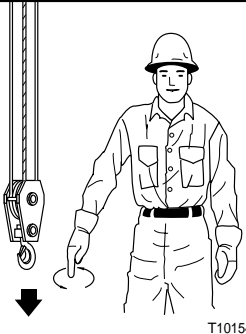
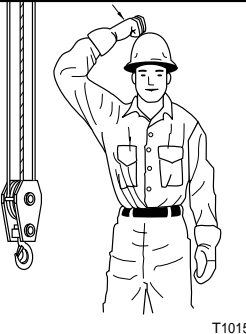

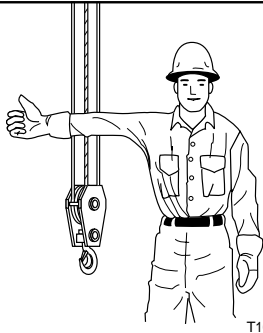
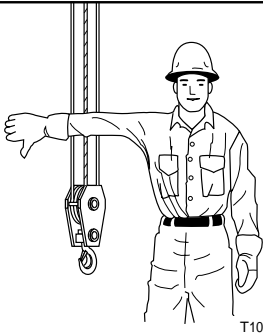
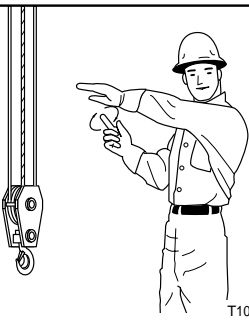
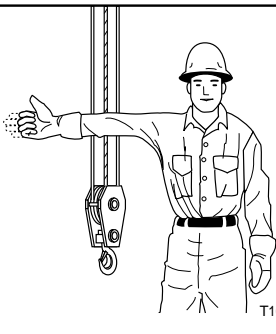
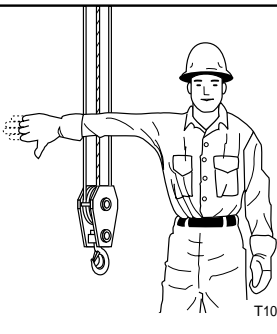
Components	Winch speed reducer	Swing speed reducer
Type	API Service Class GL-3	ISO VG 320
Shell	Shell Gelco Super Mission	Shell OmalaOil 320
Esso	-----	Spartan EP320
Exxon Mobil	■ Mobilgear 600XP 220	■ Mobilgear 600XP 320
Texaco	■ Texaco Meropa 220	-----

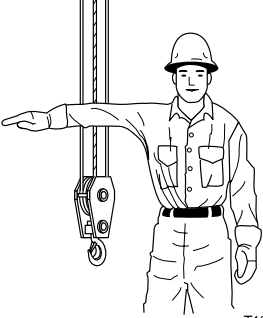
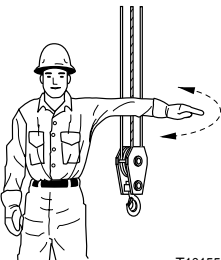
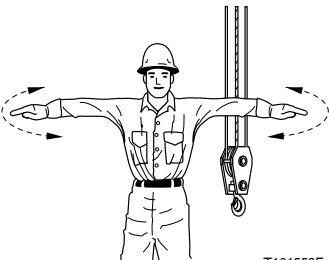
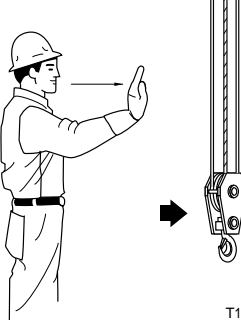

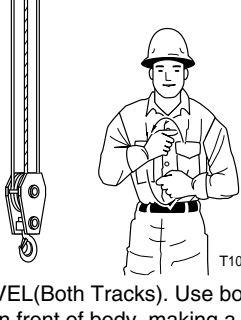

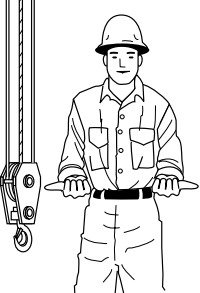
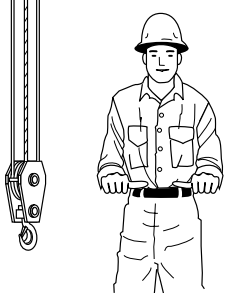
Greases

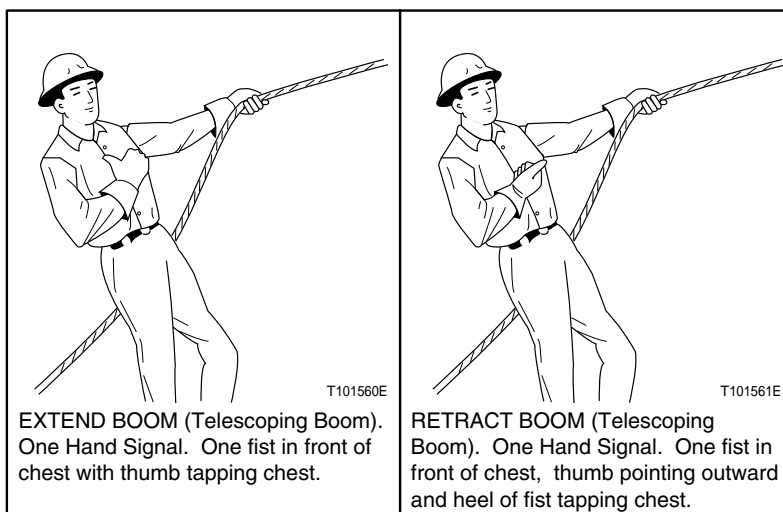
Components	Boom	Wire rope	Other
TADANO Genuine	■ TNR	-----	-----
Idemitsu	-----		■ Daphne Eponex SR No.2
Shell	-----		Shell Alvania EP Grease 2
Esso	-----		Lithtan EP2
Exxon Mobil	-----	■ Mobilarma798	Mobilux EP2

4-5 Hand Signals

Hand Signals here are an excerpt from ASME B30.5-1994.

 <p>T101542E</p> <p>HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	 <p>T101543E</p> <p>LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</p>	 <p>T101544E</p> <p>USE MAIN HOIST. Tap fist on head; then use regular signals.</p>
 <p>T101545E</p> <p>USE WHIPLINE (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.</p>	 <p>T101546E</p> <p>RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.</p>	 <p>T101547E</p> <p>LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.</p>
 <p>T101548E</p> <p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)</p>	 <p>T101549E</p> <p>RAISE THE BOOM AND LOWER THE LOAD. With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.</p>	 <p>T101550E</p> <p>LOWER THE BOOM AND RAISE THE LOAD. With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</p>

 <p>T101551E</p> <p>SWING. Arm extended, point with finger in direction of boom.</p>	 <p>T101552E</p> <p>STOP. Arm extended, palm down, move arm back and forth horizontally.</p>	 <p>T101553E</p> <p>EMERGENCY STOP. Both arms extended, palms down, move arms back and forth horizontally.</p>
 <p>T101554E</p> <p>TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.</p>	 <p>T101555E</p> <p>DOG EVERYTHING. Clasp hands in front of body.</p>	 <p>T101556E</p> <p>TRAVEL(Both Tracks). Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. (For land cranes only.)</p>
 <p>T101557E</p> <p>TRAVEL(One Track). Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For land cranes only.)</p>	 <p>T101558E</p> <p>EXTEND BOOM(Telescoping Booms). Both fists in front of body with thumbs pointing outward.</p>	 <p>T101559E</p> <p>RETRACT BOOM(telescoping Booms). Both fists in front of body with thumbs pointing toward each other.</p>



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History of Revision	
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