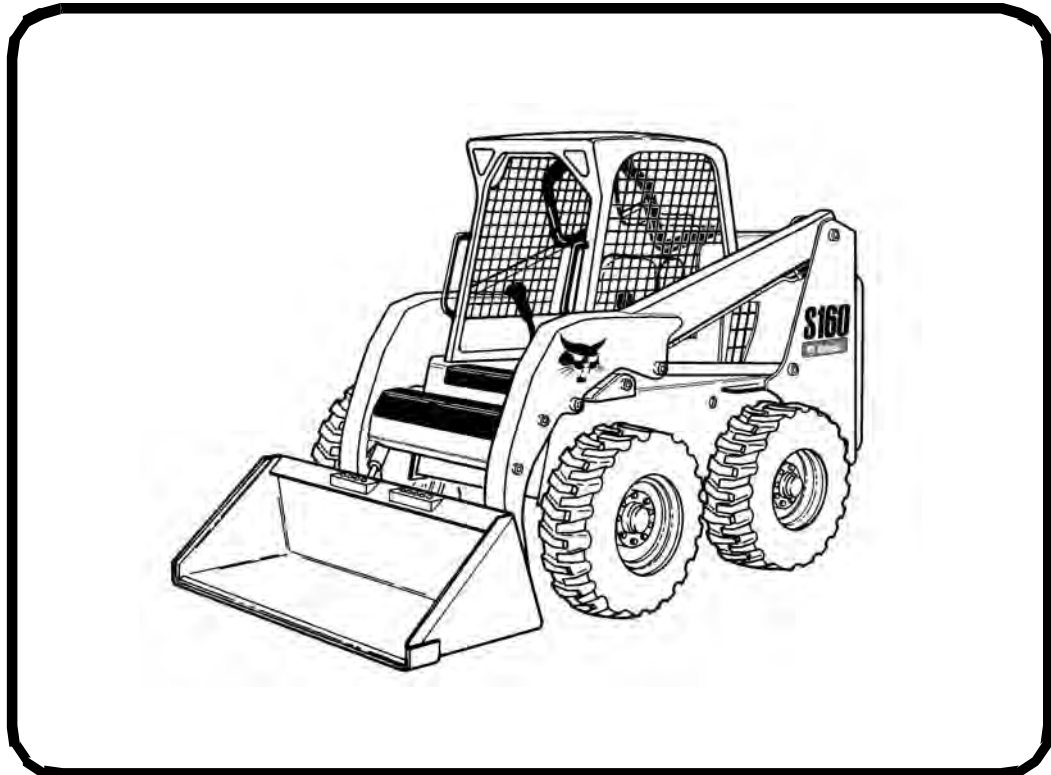




Bobcat®

Operation & Maintenance Manual S160 Skid-Steer Loader

S/N 529911001 - 529959999
S/N 530011001 - 530059999
S/N AC3211001 - AC3259999



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS)



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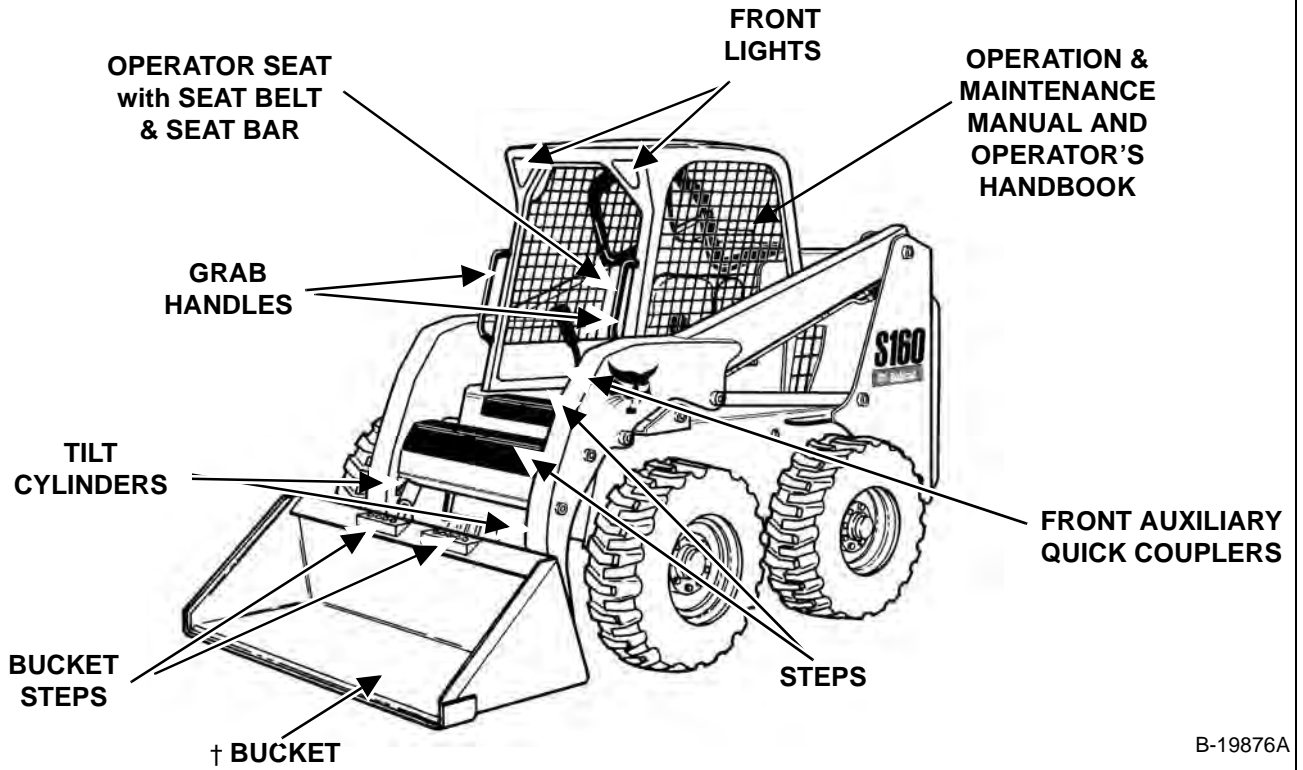
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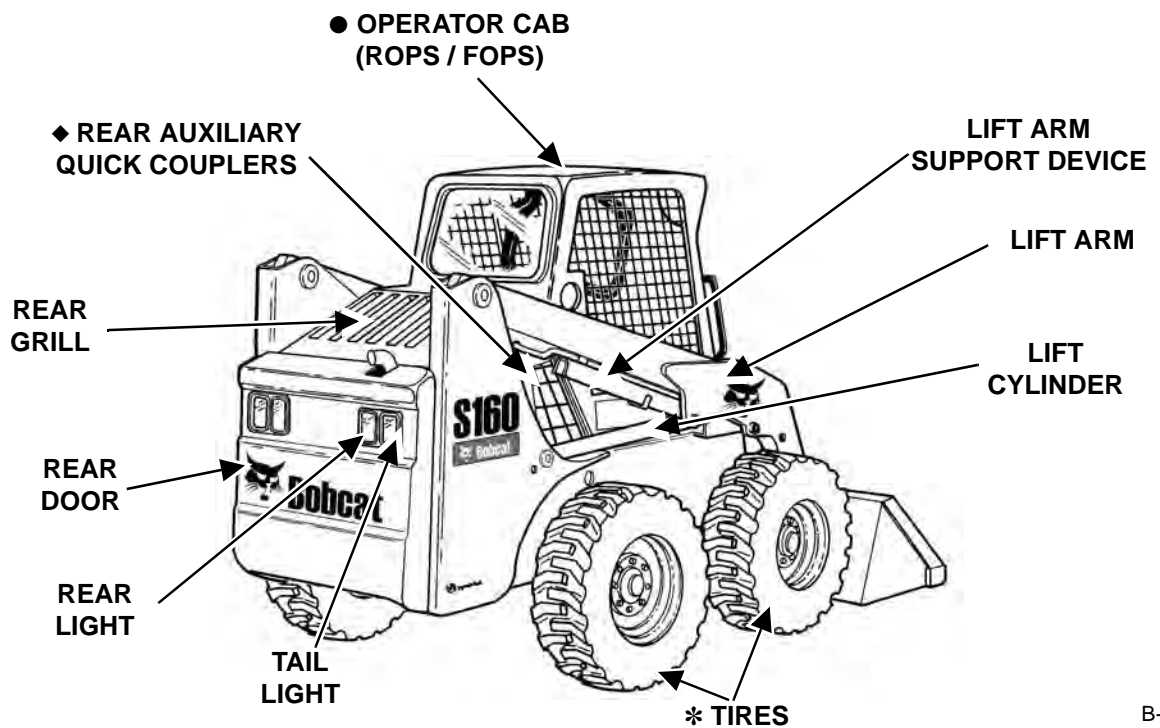
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LOADER IDENTIFICATION



B-19876A



B-19877A

◆ Optional or Field Accessory (Not Standard Equipment)

* TIRES - Tires shown may not be standard. The machine is factory equipped with standard tires. Other tires are available.

† Bucket - Several different buckets and other attachments are available for this machine.

● ROPS, FOPS - Roll Over Protective Structure, per SAE / ISO 3471, and Falling Object Protective Structure per ISO 3449, Level I. Level II is available.

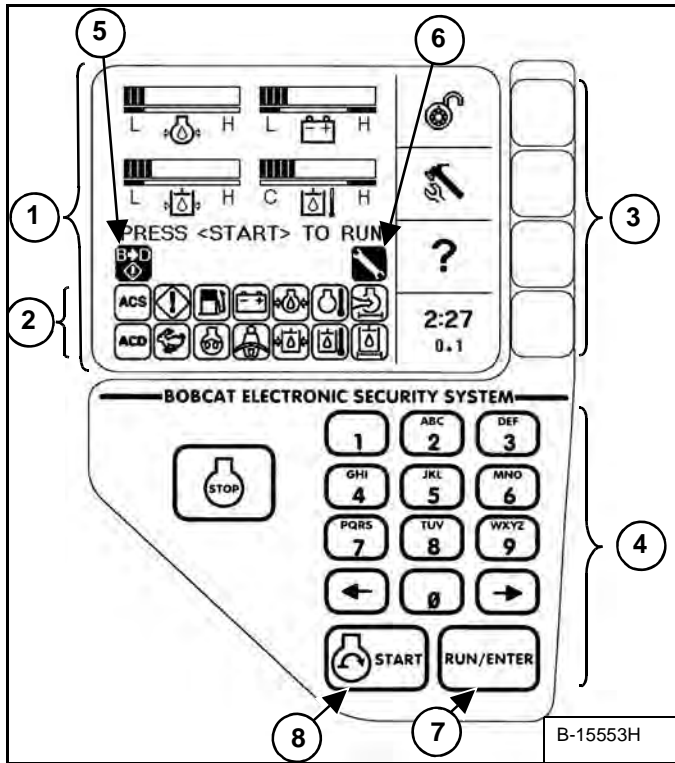


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INSTRUMENT PANEL IDENTIFICATION (CONT'D)

Right Panel (Keyless)

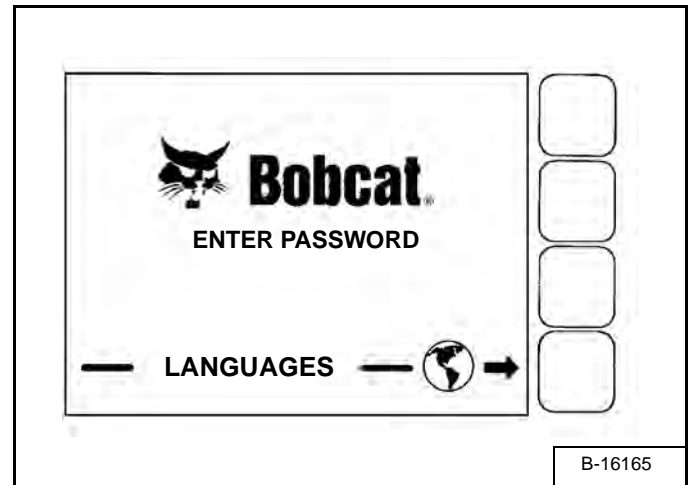
Figure OI-3



The right instrument panel shown [Figure OI-3] is the Keyless Panel.

1. **Display Screen:** The Display Screen is where all system setup, monitoring, troubleshooting, and error conditions are displayed.
2. **Function Icons:** The lower left area of the Display Screen contains the same icons as the Key Switch Panel. These icons are only visible when the monitoring system has detected the associated condition.
3. **Selection Buttons:** The four Selection Buttons allow you to select items from the Display Screen and scroll through screens.
4. **Keypad:** The numeric keypad has two functions:
 - To enter a number code (password) to allow starting the engine (Keyless Start).
 - To enter a number as directed for further use of the Display Screen.
5. **Bobcat Controller / Display Icon:** Indicates communication error between Bobcat controller and instrument panel. (See DIAGNOSTIC SERVICE CODES on Page SA-4.)
6. **BobCARE PMSM Icon:** Indicates planned maintenance is due. (See MAINTENANCE CLOCK on Page SA-14.)

Figure OI-4



The first screen you will see on your new loader will be as shown in [Figure OI-4].

When this screen is on the display you can enter the password and start the engine or change the Display Panel setup features.

NOTE: Your new loader (with Keyless Instrument Panel) will have a Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorized use of your loader. (See Changing The Owner Password on Page SA-12.) Keep your password in a safe place for future needs.

Start Engine: Use the Keypad to enter the numbers (letters) of your password and press the RUN / ENTER key (Item 7) [Figure OI-3].

Press and hold the START button (Item 8) [Figure OI-3] until the engine starts.

Change Language: Press the Selection button at the end of the arrow [Figure OI-4] to go to the next screen.

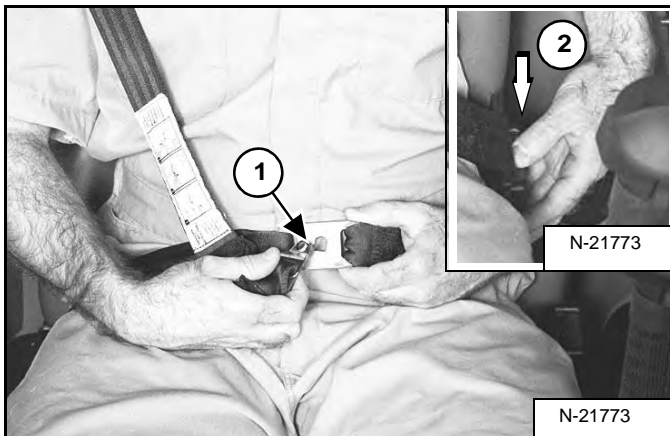
TWO-SPEED CONTROL

Description

This machine may be equipped with two-speed. The two-speed allows you to reduce cycle times when there is a long travel distance between the dig site and the dump site. You can also use the two-speed when traveling from one job site to another at faster speeds.



Figure OI-27



NOTE: The 3-point restraint must be used when selecting two-speed operation [Figure OI-27].

Connect the shoulder belt to the lap belt (Item 1). Pull the lap belt across to the left side of the seat (Item 2) [Figure OI-27] and fasten.

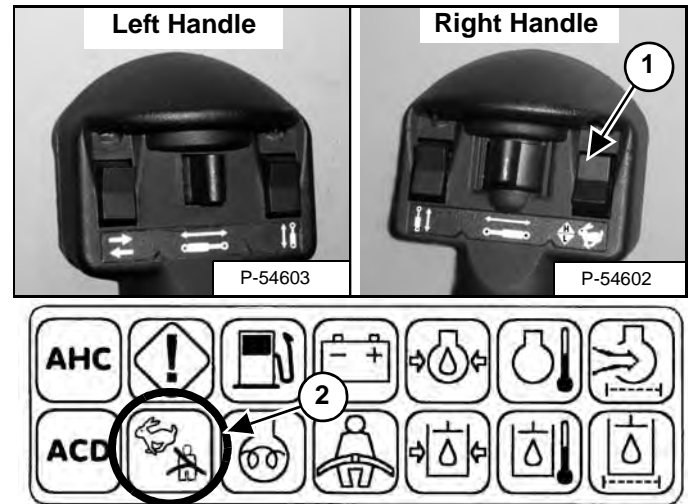
The shoulder belt must be positioned over your right shoulder and lap belt over your lower hips [Figure OI-27].

NOTE: The two-speed icon (Item 2) [Figure OI-28] or [Figure OI-29] will flash slowly if you attempt to engage two-speed operation before the hydraulic / hydrostatic fluid has been warmed up. (See Warming The Hydraulic / Hydrostatic System on Page OI-39.)

Operation

Standard and ACS (If Equipped)

Figure OI-28



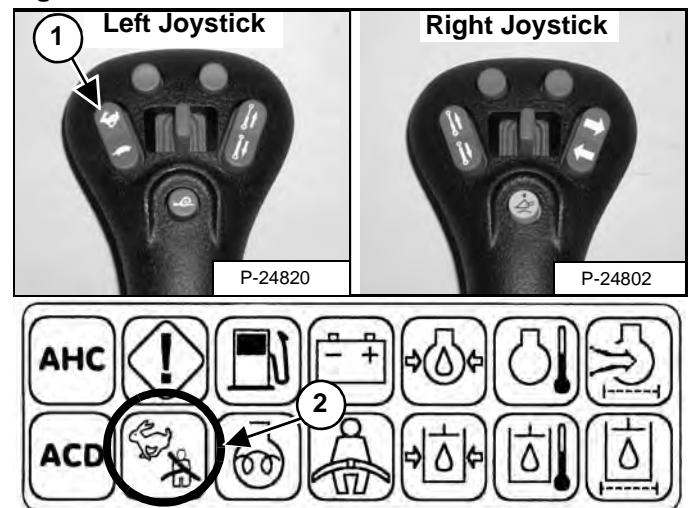
Press the top of the switch (Item 1) on the right handle for high range. The two-speed icon located on the right hand instrument panel (Item 2) [Figure OI-28] will come on.

NOTE: This toggle switch retains the selected range. The loader will be in high range speed at start-up if the switch is in the high range position.

Press the bottom of the switch for low range.

SJC (If Equipped)

Figure OI-29



Press the top of the switch (Item 1) on the left joystick for high range. The two-speed icon located on the right hand instrument panel (Item 2) [Figure OI-29] will come on.

NOTE: This momentary contact switch does not retain the last range selected. The loader will default to low range speed at start-up.

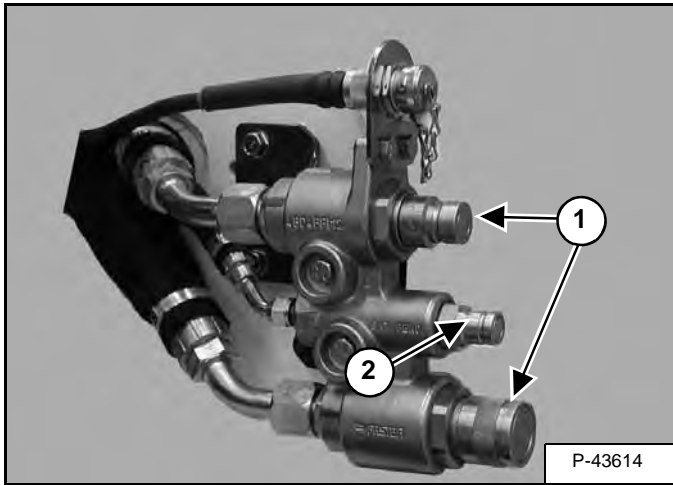
Press the bottom of the switch for low range.

HYDRAULIC CONTROLS (CONT'D)

High-Flow Hydraulics Operation

This machine may be equipped with High-Flow Hydraulics.

Figure OI-53

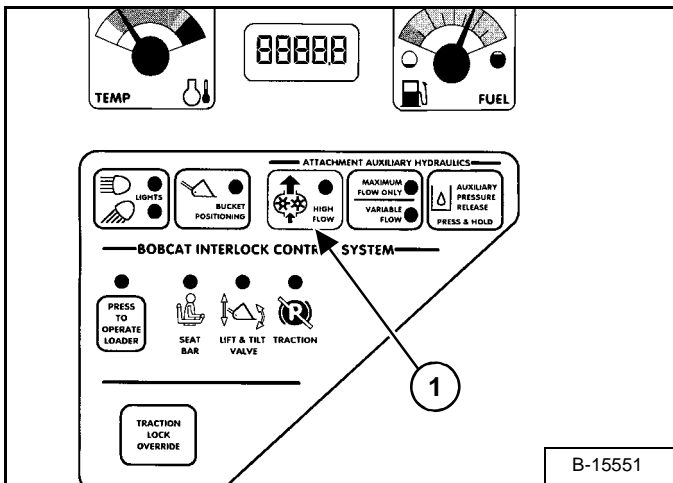


The High-Flow function provides additional flow to the system to operate an attachment which requires more hydraulic flow (EXAMPLE: Planer)

Connect the attachment to the quick couplers (Item 1) [Figure OI-53].

Some attachments may have a case drain which needs to be connected to the small quick coupler (Item 2) [Figure OI-53].

Figure OI-54



Press the HIGH FLOW button (Item 1) [Figure OI-54].

Press a second time to disengage.

STARTING THE ENGINE (CONT'D)

Keyless



AVOID INJURY OR DEATH

- Engines can have hot parts and hot exhaust gas. Keep flammable material away.
- Do not use machines in atmosphere containing explosive gas.

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Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page OI-32.)

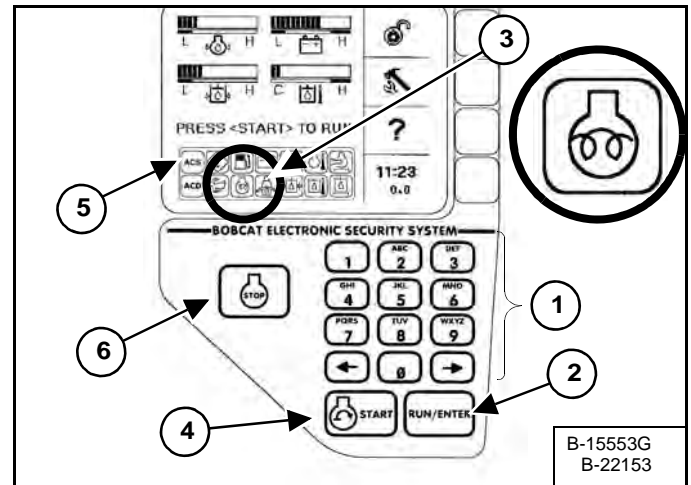
Figure OI-75



Set the engine speed control to the idle position [Figure OI-75]

NOTE: Loaders with *Keyless Instrument Panel* have a permanent, randomly generated Master Password set at the factory. Your loader will be assigned an Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorized use of your loader. (See Changing The Owner Password on Page SA-12.) Keep your password in a safe place for future needs.

Figure OI-76



Use the numeric keypad (Item 1) [Figure OI-76] to enter the password, then press the RUN / ENTER button (Item 2) [Figure OI-76].

If the temperature is cold, the glow plugs will automatically cycle and the Glow Plug icon light (Item 3) [Figure OI-76] will be ON.

When the Glow Plug icon light goes OFF, press the START button (Item 4) [Figure OI-76]. Release the button when the engine starts.

NOTE: Make sure both hand controls (ACS) or joysticks (SJC) are in the neutral position before starting the engine. Do not move the levers or joysticks from the neutral position before attempting to start the engine.

If either hand control is moved:

- a. The neutral position for the hydraulic valve spool and hand control may not be correctly calibrated. This can result in movement of the lift or tilt hydraulic cylinders when the hand control lever is returned to the neutral position after start-up.

OR

- b. ACS indicator light (Item 5) [Figure OI-76] on right instrument panel will be ON.

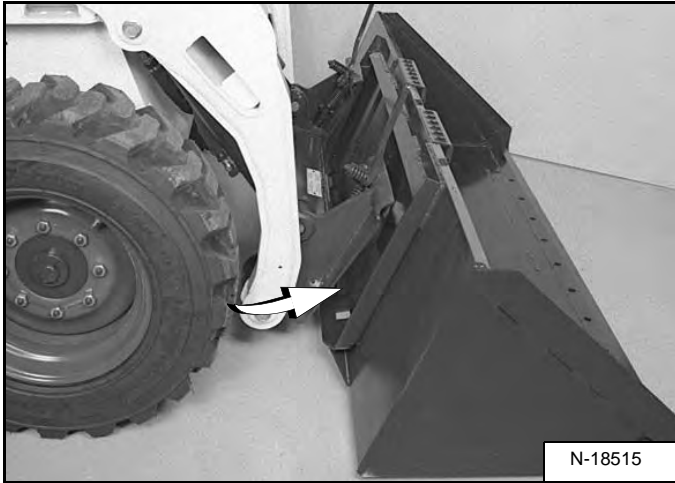
If either condition occurs, press the STOP button (Item 6) [Figure OI-76]. Put the controls in neutral position and re-start engine.

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Power Bob-Tach) (Cont'd)

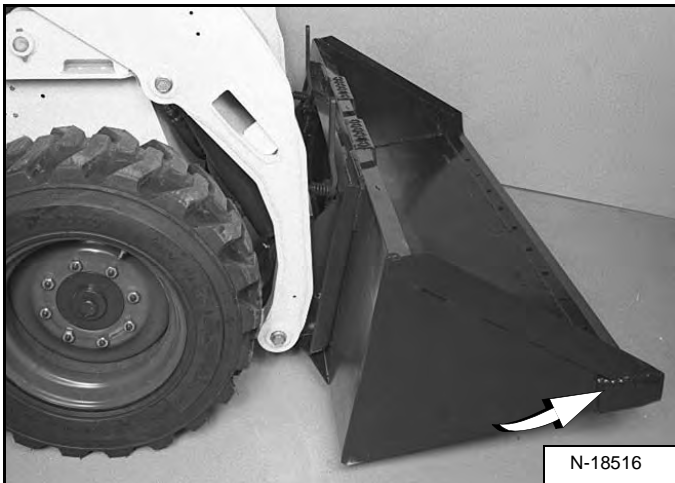
Installing (Cont'd)

Figure OI-102



Drive the loader forward until the top edge of the Bob-Tach is completely under the top flange of the bucket [Figure OI-102] (or other attachment).

Figure OI-103



Tilt the Bob-Tach backward until the cutting edge of the bucket (or other attachment) is slightly off the ground [Figure OI-103].

Push and hold Bob-Tach “WEDGES UP” switch (Item 1) [Figure OI-101] (Front Panel) to make sure both levers are all the way up.

NOTE: The Power Bob-Tach system has continuous pressurized hydraulic oil to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (WEDGES UP) to be sure both wedges are fully raised before installing the attachment.

Push and hold BOB-TACH “WEDGES DOWN” switch (Front Panel) (Item 1) [Figure OI-101] until levers are fully engaged in the locked position (Item 3) [Figure OI-101] (wedges fully extended).

The wedges (Item 4) [Figure OI-101] must extend through the holes in the mounting frame of the bucket (or other attachment), securely fastening the bucket to the Bob-Tach.

! WARNING

Bob-Tach wedges must extend through the holes in attachment. Lever(s) must be fully down and locked. Failure to secure wedges can allow attachment to come off and cause injury or death.

W-2102-0497

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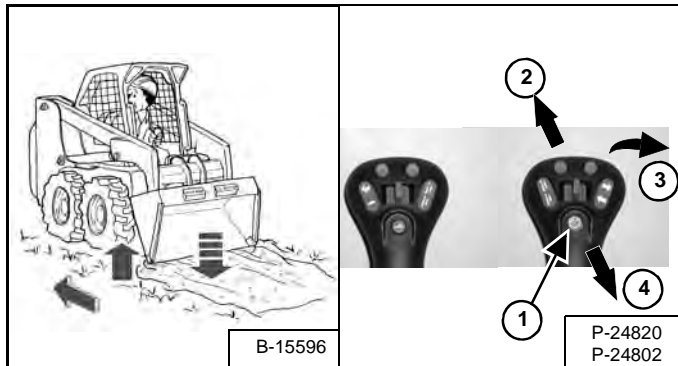
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OPERATING PROCEDURE (CONT'D)

Leveling The Ground Using Float (SJC - 'ISO' Pattern)

Figure OI-127



Press and hold the float button (Item 1) [Figure OI-127] while the joystick is in neutral. While lowering the lift arms (Item 2) [Figure OI-127], release the float button.

Tilt the bucket forward (Item 3) [Figure OI-127] to change the position of the cutting edge of the bucket.

With the bucket tilted farther forward, there is more force on the cutting edge and more loose material can be moved.

Drive backward to level loose material.

To disengage, press the float button again or raise the lift arms (Item 4) [Figure OI-127].

IMPORTANT

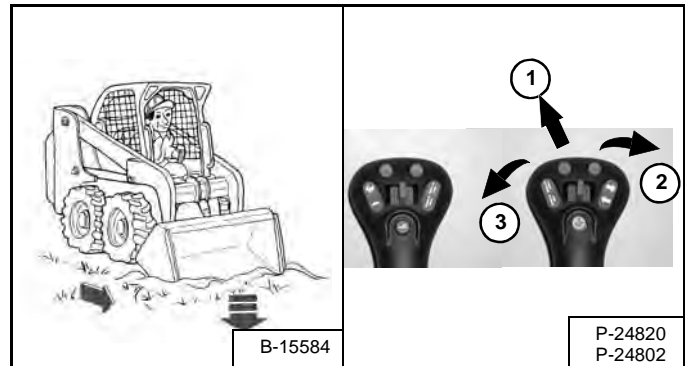
Never drive forward when the hydraulic control for lift arms is in float position.

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Digging And Filling A Hole (SCJ - 'ISO' Pattern)

Digging

Figure OI-128



Lower the lift arms all the way (Item 1) [Figure OI-128]. Put the cutting edge of the bucket on the ground (Item 2) [Figure OI-128].

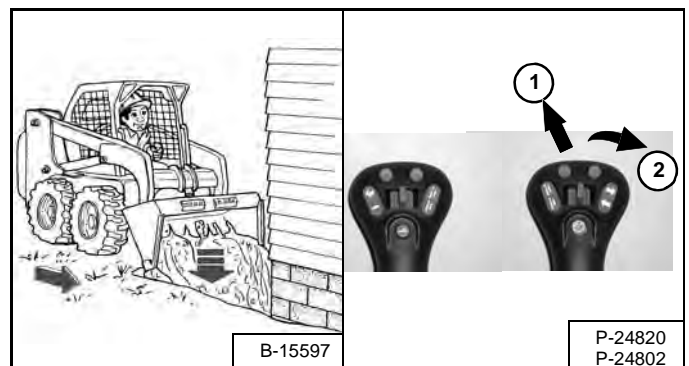
Drive forward slowly and continue to tilt the bucket down (Item 2) [Figure OI-128] until it enters the ground.

Raise the cutting edge a small amount (Item 3) [Figure OI-128] to increase traction and keep an even digging depth. Continue to drive forward until the bucket is full. When the ground is hard, raise and lower the cutting edge (Items 2 & 3) [Figure OI-128] while driving forward.

Tilt the bucket backward (Item 3) [Figure OI-128] as far as it will go when the bucket is full.

Filling

Figure OI-129



Lower the lift arms (Item 1) [Figure OI-129] and put the cutting edge of the bucket on the ground (Item 2) [Figure OI-129]. Drive forward to the edge of the hole to push the material into the hole.

Tilt the bucket forward (Item 2) [Figure OI-129] as soon as it is past the edge of the hole.

If necessary, raise the lift arms to empty the bucket.

SERVICE SCHEDULE

Chart

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The service schedule is a guide for correct maintenance of the Bobcat Loader.



WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

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SERVICE SCHEDULE		HOURS					
ITEM	SERVICE REQUIRED	8-10	50	100	■ 250	■ 500	■ 1000
Engine Oil	Check the oil level and add as needed. Do not overfill.						
Engine Air Filter and Air System	Check display panel. Service only when required. Check for leaks and damaged components.						
Engine Cooling System	Clean debris from oil cooler, radiator and grill. Check coolant level COLD and add premixed coolant as needed.						
Fuel Filter	Remove the trapped water.						
Lift Arms, Cylinders, Bob-Tach Pivot Pins and Wedges	Lubricate with multi-purpose lithium based grease.						
Tires	Check for damaged tires and correct air pressure. Inflate to MAXIMUM pressure shown on the sidewall of the tire.						
Seat Bar, Control Interlocks, Seat Belt, Seat Belt Retractors	Check the condition of seat belt. Clean or replace seat belt retractors as needed. Check the seat bar and control interlocks for correct operation. Clean dirt and debris from moving parts.						
Bobcat Interlock Control Systems (BICS)	Check for correct function. Lift and Tilt functions MUST NOT operate with seat bar raised. See details in this Manual.						
Safety Signs and Safety Treads	Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn.						
Operator Cab	Check the fastening bolts, washers and nuts. Check the condition of the cab.						
Indicators and Lights	Check for correct operation of all indicators and lights.						
Heater and A/C Filters (If Equipped)	Clean or replace filters as needed.						
Hydraulic Fluid, Hoses and Tubelines	Check fluid level and add as needed. Check for damage and leaks. Repair or replace as needed.						
Final Drive Trans. (Chaincase),	Check fluid level and add as needed.						
Parking Brake, Foot Pedals, Hand Controls and Steering Levers or Joysticks	Check for correct operation. Repair or adjust as needed.						
Wheel Nuts	Check for loose wheel nuts and tighten to correct torque. (See TIRE MAINTENANCE in this manual.)	☐					
Spark Arrestor Muffler	Clean the spark chamber.						
Battery	Check cables, connections and electrolyte level. Add distilled water as needed.						
Steering Lever Pivots	Grease fittings.						
Fuel Filter	Replace filter element.						
Engine / Hydro. Drive Belt	Check for wear or damage. Check idler arm stop.		▲				
Drive Belts (Alternator, air conditioner, water pump)	Check condition and tension. Adjust or replace as needed.						
Bobcat Interlock Control System (BICS)	Check the function of the lift arm bypass control.						
Hydraulic / Hydrostatic Filter, Charge Filter, Reservoir Breather	Replace the hydraulic / hydrostatic filter, charge filter, and the reservoir breather.		●				
Engine Oil and Filter	Replace oil and filter.		▲		*		
Final Drive Trans. (Chaincase)	Replace the fluid.						
Hydraulic Reservoir	Replace the fluid.						
Case Drain Filters	Replace the filters.		▲				
Engine Valves	Adjust the engine valves.						○
Coolant	Replace the coolant						Every 2 years

■ Or every 12 months.

▲ Perform at first 50 hours, then as scheduled.

☐ Check every 8 - 10 hours for the first 24 hours, then at 50 hour intervals.

● Replace the hydraulic / hydrostatic filter element after the first 50 hours, then when the transmission warning light comes ON while operating or as scheduled.

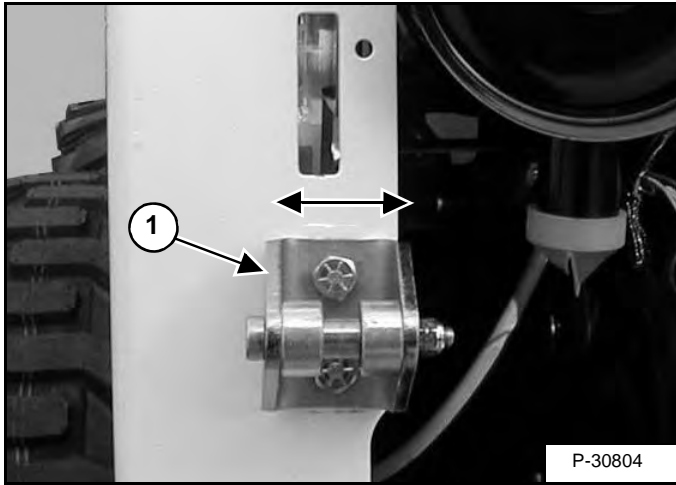
* Change oil and filter every 250 hours when operating under severe conditions.

○ Perform at first 500 hours, then as scheduled.

REAR DOOR (CONT'D)

Adjusting

Figure PM-20



The door latch (Item 1) [Figure PM-20] can be adjusted side to side for alignment with the door latch mechanism.

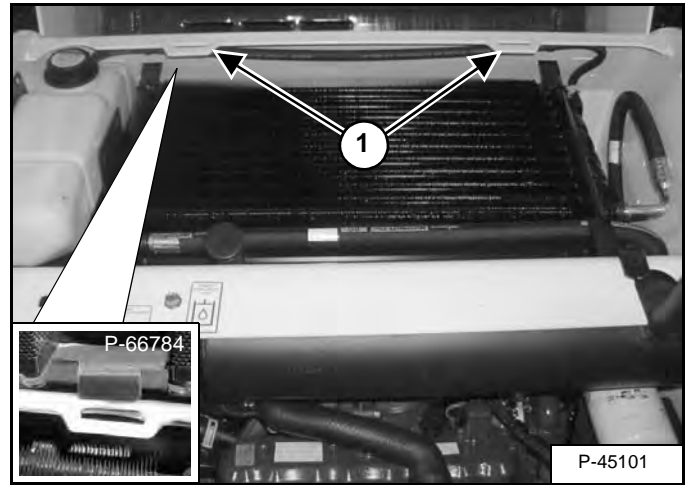
Close the rear door before operating the loader.

REAR GRILL

Removing

Open the rear door.

Figure PM-21



Lift and pull the rear grill and remove it from the loader [Figure PM-21].

Installing

Align the two tabs of the rear grill into the slots (Item 1) [Figure PM-21] at the front edge of the grill.

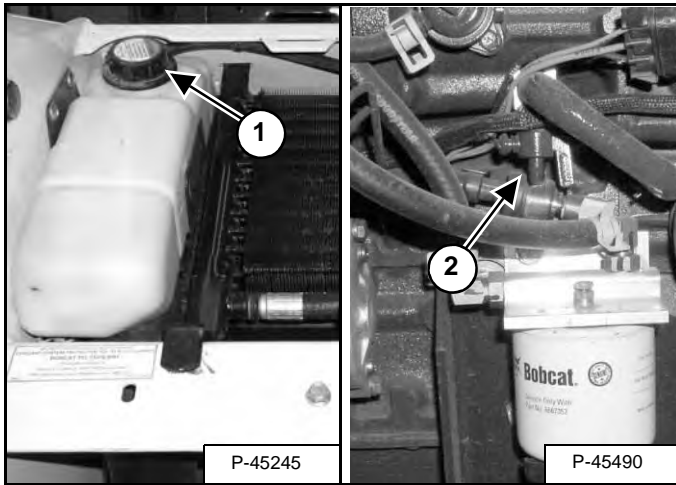
Lower the rear grill and close the rear door.

ENGINE COOLING SYSTEM (CONT'D)

Removing And Replacing Coolant

Open the rear door and remove the rear grill.

Figure PM-43



Remove the coolant fill cap (Item 1) [Figure PM-43].

Connect a hose to the engine block drain (Item 2) [Figure PM-43]. Open the drain valve and drain the coolant into a container. Close the drain valve.

Recycle or dispose of used coolant in an environmentally safe manner.

NOTE: The loader is factory filled with propylene glycol coolant (purple color). DO NOT mix propylene glycol with ethylene glycol.

Premix coolant (53% propylene glycol and 47% water) in a separate container. For correct capacity, (See Capacities on Page SPEC-6.)

One gallon and one pint of propylene glycol mixed with one gallon of water is the correct ratio (53%/47%) to provide -34°F (-37°C) freeze protection.

Fill the tank until it is at the lower marker on the tank.

Use a refractometer to check the condition of propylene glycol in the cooling system and replace the coolant fill cap.

NOTE: When installing the coolant fill cap, the cap must be tightened until it clicks.

Run the engine until it is at operating temperature. Stop the engine. Check the coolant level in the recovery tank when cool. Add coolant as needed.

Install the rear grill and close the rear door.

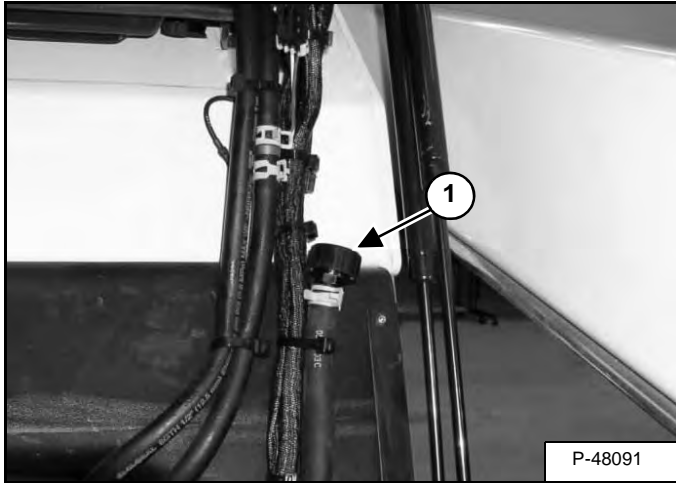
HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

Breather Cap

See the SERVICE SCHEDULE for the correct replacement interval. (See SERVICE SCHEDULE on Page PM-7.)

Raise the cab. (See Raising on Page PM-14.)

Figure PM-65



Remove and discard the hydraulic breather cap (Item 1) **[Figure PM-65]**.

Install new breather cap.

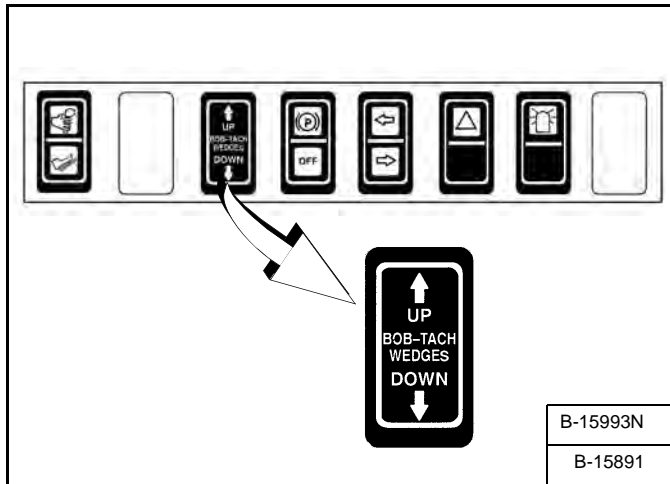
Lower the cab. (See Lowering on Page PM-15.)

BOB-TACH (POWER)

This machine may be equipped with a Power Bob-Tach.

Inspection And Maintenance

Figure PM-86



Push and hold the BOB-TACH “WEDGES UP” switch [Figure PM-86] until wedges are fully raised. Push and hold the BOB-TACH “WEDGES DOWN” switch [Figure PM-86] until the wedges are fully down.

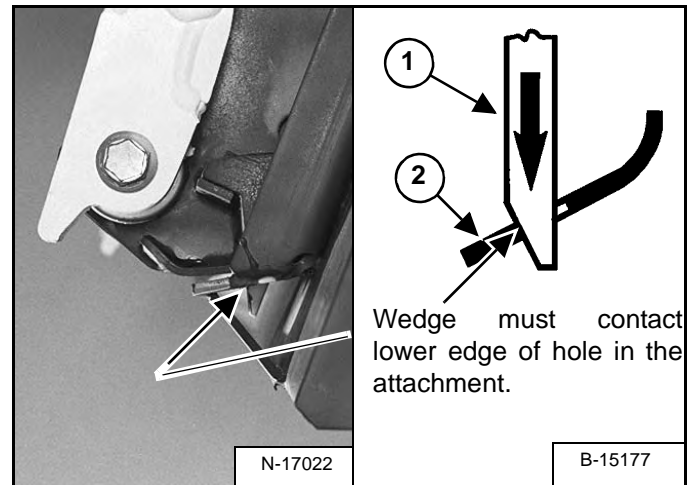
The levers and wedges must move freely.



Bob-Tach wedges must extend through the holes in attachment. Lever(s) must be fully down and locked. Failure to secure wedges can allow attachment to come off and cause injury or death.

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Figure PM-87

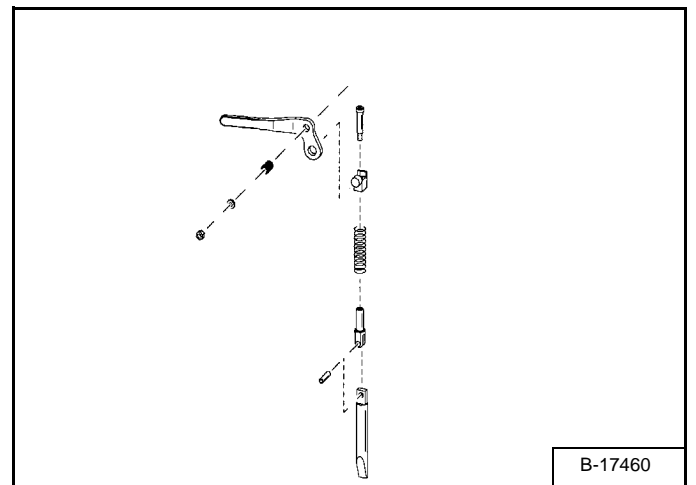


The wedges must extend through the holes in the attachment mounting frame (Item 1) [Figure PM-87].

The spring loaded wedge (Item 1) [Figure PM-87] must contact the lower edge of the hole in the attachment (Item 2) [Figure PM-87].

If the wedge does not contact the lower edge of the hole [Figure PM-87], the attachment will be loose and can come off the Bob-Tach.

Figure PM-88



Inspect the mounting frame on the attachment and the Bob-Tach, linkages and wedges for excessive wear or damage [Figure PM-88]. Replace any parts that are damaged, bent, or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.


Lubricate the wedges. (See SERVICE SCHEDULE on Page PM-7.) (See LUBRICATING THE LOADER on Page PM-43.)

DIAGNOSTIC SERVICE CODES (CONT'D)


Service Codes List (Cont'd)

CODE		CODE	
75-68	Angle sensors not calibrated	80-03	ACD output 'A' error OFF
75-69	Battery voltage out of range high		
75-70	Interrupted power (Also occurs after software updates)	81-02	ACD output 'B' error ON
75-71	Battery voltage out of range low	81-03	ACD output 'B' error OFF
75-72	Drive pump not calibrated		
75-73	ISO/H pattern switch flipped while operating	82-02	ACD output 'C' error ON
75-74	Right wheel speed uncommanded motion	82-03	ACD output 'C' error OFF
75-75	Left wheel speed uncommanded motion		
75-76	No communication from ACS controller	83-02	ACD output 'D' error ON
75-77	Left speed sensor out of range high	83-03	ACD output 'D' error OFF
75-78	Right speed sensor out of range high		
75-79	Left speed sensor out of range low	84-02	ACD output 'E' error ON
75-80	Right speed sensor out of range low	84-03	ACD output 'E' error OFF
75-81	Right front steer retract short to battery		
75-82	Left front steer retract short to battery	85-02	ACD output 'F' error ON
75-83	Right rear steer retract short to battery	85-03	ACD output 'F' error OFF
75-84	Left rear steer retract short to battery		
75-85	5 volt sensor supply 1 out of range high	86-02	ACD output 'G' error ON
75-86	Sensor supply 2 out of range high	86-03	ACD output 'G' error OFF
75-88	Controller in programming mode		
75-91	Left swash plate sensor reversed	87-02	ACD output 'H' error ON
75-92	Right swash plate sensor reversed	87-03	ACD output 'H' error OFF
75-93	Unresponsive right speed sensor		
75-94	Unresponsive left speed sensor	90-02	Service tool output 'C' error ON
75-95	Left speed sensor reverse direction	90-03	Service tool output 'C' error OFF
75-96	Right speed sensor reverse direction		
75-98	Controller in calibration mode	91-02	Service tool output 'D' error ON
		91-03	Service tool output 'D' error OFF
76-73	Left hand panel system RX error		
		92-02	Service tool output 'E' error ON
77-48	Key switch multiple	92-03	Service tool output 'E' error OFF
78-74	Door/transport lock open/active	93-02	Service tool output 'F' error ON
		93-03	Service tool output 'F' error OFF
80-02	ACD output 'A' error ON		


ENTRÉE DANS LA CHARGEUSE



UTILISATION DE LA CHARGEUSE



SORTIE DE LA CHARGEUSE



INSTRUCTIONS D'UTILISATION DES COMMANDES PAR MANIPULATEUR

POUR UTILISER LA CHARGEUSE :

1. Attachez la ceinture de sécurité et abaissez l'arceau de siège.
2. Placez les commandes du manipulateur au point mort.
3. Démarrez le moteur.
4. Sélectionnez le mode de commande (ISO ou H) sur le tableau de bord central.
5. Appuyez sur le bouton "PRESS TO OPERATE LOADER"

- Le témoin ACS ou d'avertissement général du tableau de bord droit devrait être éteint.
- Si les opérations hydrauliques ou de traction ne fonctionnent pas, arrêtez le moteur.

Vérifiez que les deux manipulateurs sont bien au point mort.
Redémarrez le moteur.

Remarque : actionnez de nouveau le bouton "PRESS TO OPERATE LOADER" si vous avez relevé puis abaissé l'arceau de siège ou si la clé est en position OFF.

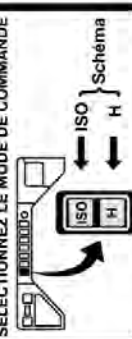
Voir le Manuel et le Guide de l'Opérateur et d'Entretien pour des instructions supplémentaires.


⚠ AVERTISSEMENT

UN MOUVEMENT ACCIDENTEL DE LA CHARGEUSE PEUT PROVOQUER DES BLESSURES GRAVES, VOIRE MORTELLES

- Les fonctions de traction et de levage se commandent sur un manipulateur différent selon le mode.
- Vous devez connaître et comprendre le mode de commande sélectionné avant d'utiliser la chargeuse.

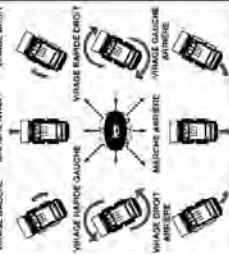
SELECTIONNEZ LE MODE DE COMMANDE



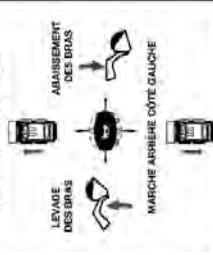


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MANIPULATEUR GAUCHE - ISO



MANIPULATEUR GAUCHE - H



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