4 - OPERATING INSTRUCTIONS

Commissioning the unit

Engine break-in procedure

Your tractor will provide long and dependable service if given proper care during the first 50-hour break-in period. During the first 50 hours of operation:

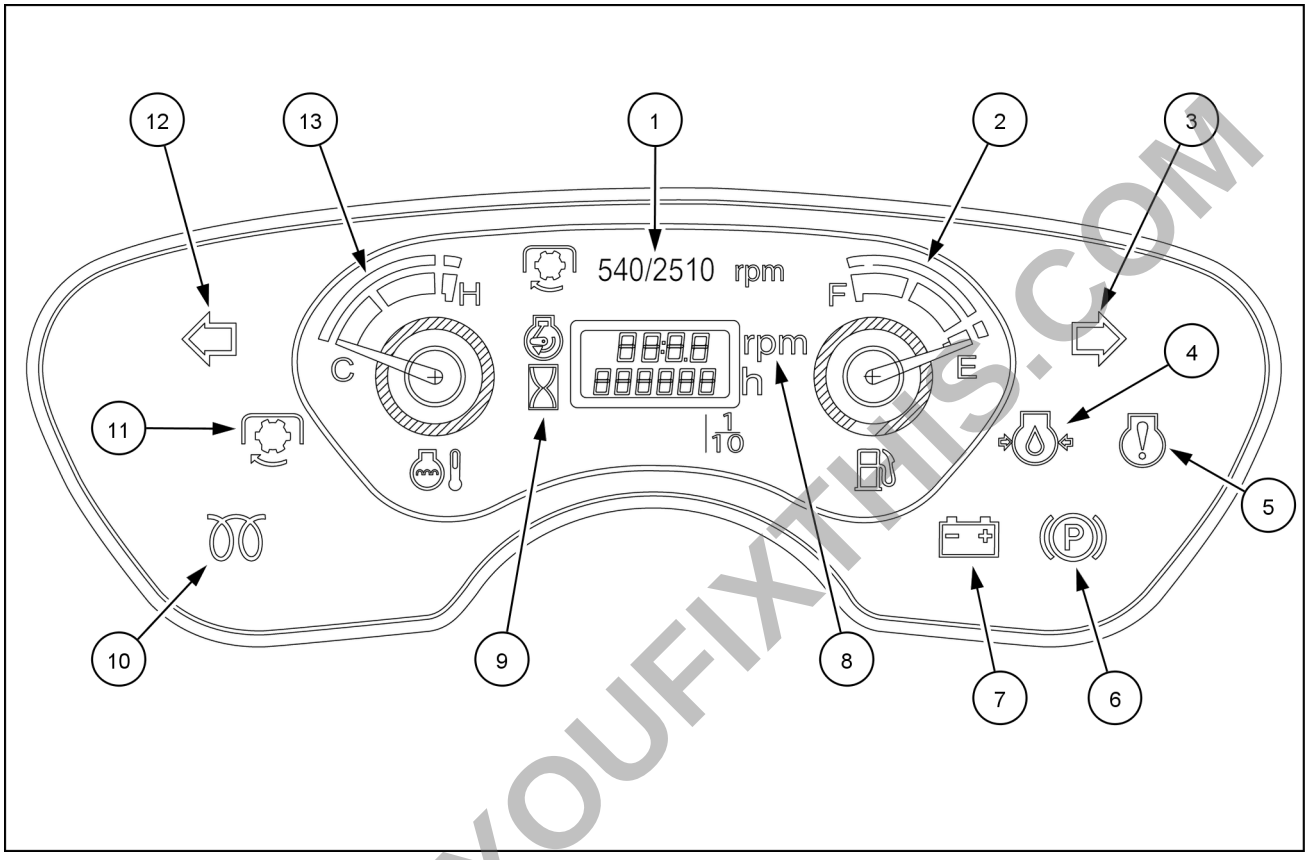
1. Avoid "lugging" the engine. Operating in too high a gear under heavy load may cause engine lugging, which is indicated when the engine will not respond to a throttle increase.
2. Use the lower gear ratios when pulling heavy loads and avoid continuous operation at constant engine speeds. You will save fuel and minimize engine wear by selecting the correct gear ratio for a particular operation. Operating the tractor in low gear with a light load and high engine speed wastes fuel.
3. Avoid prolonged operation at either high or low engine speeds without a load on the engine.
4. Check the instruments frequently and keep the radiator and oil reservoirs filled to recommended levels. Daily checks include the engine oil level, radiator coolant, and air cleaner.
5. After the first 50 hours of use, be sure to perform the maintenance items listed in the maintenance schedule.

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Forward controls

Instrument cluster panel



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The following icons and indicators will display on the instrument cluster during operation of the tractor. Become familiar with each item and when you might see them based on the operating conditions of the tractor.

(1) This text informs to obtain a rear Power Take-Off (PTO) speed of **540 RPM** the engine speed must be **2510 RPM**.

(2) Fuel Gauge - Indicates the amount of diesel fuel remaining in the tank. The gauge will activate when the key switch is in the "ON" position. It will register "empty" with the key switch in the "OFF" position.

(3) Flasher Turn Lights - Operate when the multifunction switch lever is moved upwards for right turns the right arrow will flash. The flasher warning lights will also cause this to display. The key switch has to be in the "ON" or "START" positions.

(4) Engine Oil Pressure Warning Light - Illuminates with the key switch in the "ON" position and remains illuminated for a short period, after you start the engine. The light indicates low engine oil pressure only and goes out when sufficient oil pressure is present at the oil sender. If the bulb illuminates during operation, stop the tractor immediately, and investigate the cause.

(5) Engine Fault Warning Light - Illuminates when the key switch is in the "ON" position and goes out when the operator starts the engine. See your NEW HOLLAND dealer if this light illuminates during operation of your tractor, this indicates a fault with the engine speed control unit.

(6) Park Brake Indicator Light - Illuminates if the park brake is engaged with the key switch rotated to the "ON" position.

(7) Battery Charge Warning Light - Illuminates when the key switch is in the "ON" position and goes out when the operator starts the engine. An illuminated bulb during this operation indicates the charging system is not operating normally.

(8) Tachometer - Registers engine speed in Revolutions Per Minute (RPM).

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Maintenance planning

Maintenance chart

Maintenance action	Check	Cleaning	Change fluid	Replace	Tighten	Test	Bleed	Drain fluid	Adjust	Grease	Page no.
Every 8 hours or daily											
Engine lubrication system - Check	x										**7-9**
Engine cooling system - Check	x										**7-10**
Transmission - Check	x										**7-12**
Radiator screen cleaning		x									**7-13**
After first 50 hours											
Engine lubrication system - Change fluid			x								**7-14**
Fuel filters - Replace				x							**7-15**
Hydraulic oil suction filter - Replace				x							**7-16**
Hydrostatic Transmission (HST) oil filter - Replace				x							**7-17**
Roll Over Protective Structure (ROPS) frame - Check	x										**7-18**
Wheel hardware - Check					x						**7-19**
Every 50 hours											
Machine fittings - Grease									x		**7-20**
Transmission - Check	x										**7-12**
Tire pressure - Check	x										**7-23**
Clutch Pedal Free Play - Check									x		**7-25**
Hydrostatic transmission (HST) neutral adjustment - Check	x										**7-26**
Belt - Check	x										**7-27**
Mechanical service brakes - Check									x		**7-28**
Front axle differential fluid level - Check	x										**7-29**
Air cleaner - Outer element - Cleaning		x									**7-30**
Every 250 hours											
Engine lubrication system - Change fluid			x								**7-14**
Fuel filters - Replace				x							**7-15**
Hydraulic oil suction filter - Replace				x							**7-16**
Hydrostatic Transmission (HST) oil filter - Replace				x							**7-17**
Air cleaner - Outer element - Replace				x							**7-35**
Wheel hardware - Check					x						**7-19**
Roll Over Protective Structure (ROPS) frame - Check	x										**7-18**
Every 500 hours											
Front axle and differential fluid - Change			x								**7-38**
Transmission - Change fluid			x								**7-40**
Air cleaner - Inner element - Replace				x							**7-41**
Valves - Check	x										**7-42**
Every two years											
Engine cooling system - Drain fluid								x			**7-43**
As required											
Fuel injection system - Bleed							x				**7-44**
Roll Over Protective Structure (ROPS) frame - Replace - Possible damage				x							**7-45**
Battery - Test						x					**7-46**
Fuses - Check	x										**7-47**
Main fuse - Check				x							**7-48**
Headlight - Replace				x							**7-49**

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General specifications

	Model Workmaster™ 25 Hydrostatic/Mechanical
ENGINE	
Type	Diesel
Model	S3L2-W461GT
Engine Gross Horsepower	**18.2 kW** (**24.7 Hp**)
Cylinders	3
Bore	**78.00 mm** (**3.07 in**)
Stroke	**92.00 mm** (**3.62 in**)
Displacement	**1.318 L** (**80.429 in³**)
Compression Ratio	22.0:1
Firing Order	1-3-2
Low Idle Speed	**970 RPM**
Maximum Speed:	
High Idle	**2700 RPM**
Rated	**2500 RPM**
Valve Clearance (Cold)	
Intake	**0.25 mm** (**0.010 in**)
Exhaust	**0.25 mm** (**0.010 in**)
CAPACITIES	
Fuel Tank	**28.0 l** (**7.4 US gal**)
Cooling System	**4.9 L** (**1.3 US gal**)
Engine Crankcase:	
With Filter	**4.2 L** (**4.4 US qt**)
Rear Axle & Transmission (Includes Hydraulics)	
Mechanical	**32.0 L** (**8.5 US gal**)
HST	**32.0 L** (**8.5 US gal**)
Front Axle	**6.5 L** (**6.9 US qt**)
COOLING SYSTEM	
Type	Pressurized Liquid with Recirculating Bypass
Water Pump:	
Type	Centrifugal
Drive	V-Belt
Belt Deflection	**10 – 12 mm** (**0.4 – 0.47 in**) when **10 kg** (**22 lb**) pressure is applied midway between belt pulleys
Thermostat:	
Start to Open	**76.5 °C** (**170 °F**)
Fully Open	**90 °C** (**194 °F**)
Radiator Cap	**90 kPa** (**13 psi**)
ELECTRICAL SYSTEM	
Alternator	**12 V**, Heavy Duty, **50 A**
Battery	**12 V**, w/ negative ground, 660 cca BCI Group 34
Starting Motor	Solenoid Pre-Engaged Reduction
FUEL SYSTEM	
Fuel Type	Diesel
Type of Fuel to Use if Above **4 °C** (**40 °F**)	No. 2-Diesel, Cetane Rating: Minimum 40

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8 - TROUBLESHOOTING

Symptom(s)

Troubleshooting - Foreword

The following troubleshooting information will help you in the unlikely event a problem occurs with your equipment.

Reading the troubleshooting chart is easy. The left-hand column will be the problem you may be having with your equipment. The center column explains the possible cause or causes of the problem. The right-hand columns gives you corrective actions you can take to solve the problem. If you feel unsure how to handle the problem with your equipment do not hesitate to contact your NEW HOLLAND dealer for assistance.

Engine - Troubleshooting

Problem	Possible Cause	Correction
The start motor does not rotate with the key switch in the (START) position.	Low battery charge	Charge or replace
	Loose battery or starter cable terminals	Tighten the terminal
	Key switch faulty	Repair or replace switch
	Safety start switch not completing circuit	Depress clutch pedal fully
	PTO safety switch is not in "OFF" position	Place PTO switch in "OFF" position
	Starter motor faulty	Repair or replace starter motor
The start motor rotates but the engine does not start	Low battery charge	Charge or replace battery
	Air in fuel system	Bleed out the air
	Fuel filter clogged	Clean or replace the filter
	Fuel shutoff valve on fuel filter in closed position	Open the valve
	Fuel shutoff solenoid on fuel injection pump stuck in off position	Check solenoid for proper operation, repair as needed
Engine speed is irregular	Air in fuel system	Bleed the fuel system
	Fuel filter clogged	Clean or replace the filter
	Injection nozzle clogged	Repair or replace nozzle
	Fuel leakage	Repair fuel system
	Irregular fuel injection	Repair or replace fuel injection pump
Engine stops suddenly during operation	Fuel shortage	Add fuel and bleed air from fuel system
	Faulty fuel injector	Repair or replace injector
	Faulty fuel injection pump	Repair or replace injection pump
	Internal parts of engine seized due to lack of lubrication	Repair engine as needed
Engine speed is more than maximum rated high idle speed	Fault with the engine speed control unit.	See your NEW HOLLAND dealer for service.
Engine stops at low speed	Faulty injection pump	Repair or replace injection pump as needed
	Engine valve gap is not correct	Adjust the gap
	Low fuel injector pressure	Repair fuel injector as needed
Low engine power	Fuel injector nozzle clogged	Repair injector as needed
	Carbon accumulation on valve seat	Repair valve and seats as needed
	Incorrect valve gap adjustment	Adjust valve gap to correct amount
	Incorrect fuel injection timing	Check and adjust fuel injection timing as needed
	Lack of fuel supply	Check fuel system for restriction
	Air filter clogged	Clean or replace air filter
The color of exhaust smoke is white	Low engine operating temperature	Allow engine to obtain higher operating temperature

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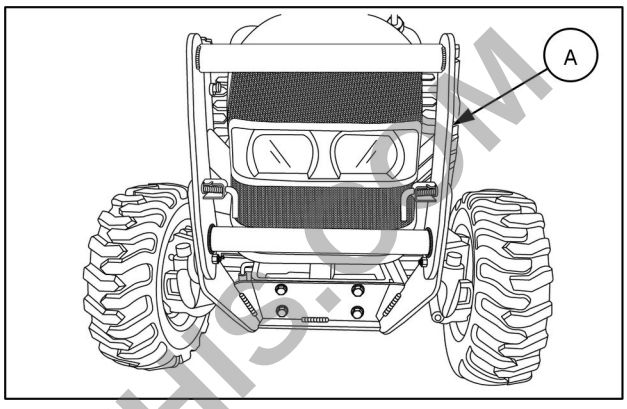
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10 - ACCESSORIES

Optional equipment

Grille guard

The optional pivoting grille guard **(A)** provides protection to the front-end of the tractor. The grille guard is compatible with the front end loader. The grille guard cannot be used with the front weight carrier.



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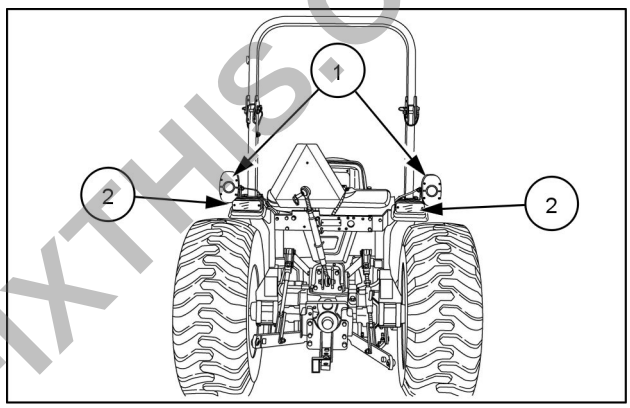
5 - TRANSPORT OPERATIONS

Road transport

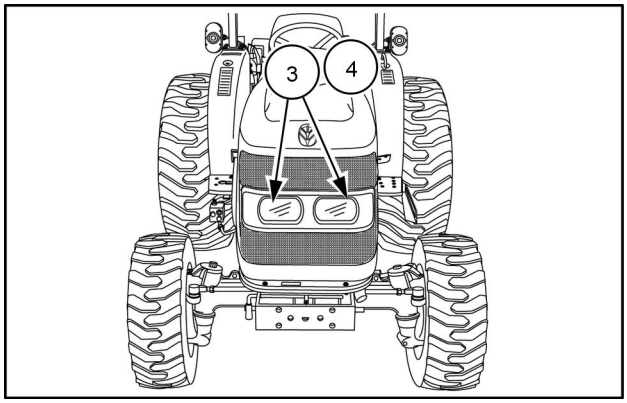
External lighting - Identification

Your tractor is equipped with the following:

- Turn signal/Hazard warning lights **(1)**.
- Tail/Brake lights **(2)**.
- Road lights **(3)** Work Lights **(4)**.
- Rear Work Light (Optional) mounted on the rear of the ROPS.



NHIL12CT00671AA 1



NHAC13CT00138AA 2

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Starting the unit

Starting the engine

⚠ WARNING

Run-over hazard!
When attempting to start the engine, always sit in the operator´s seat with the parking brake engaged and all control elements in neutral. Never attempt to start the engine while standing beside the machine.
Failure to comply could result in death or serious injury.

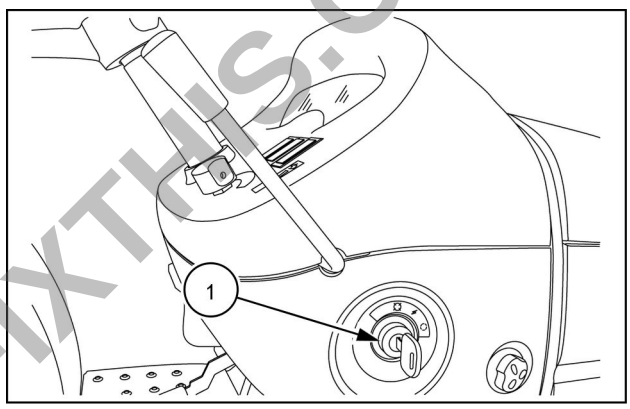
W0967B

Mechanical transmission tractor

The key switch **(1)** allows activation of the starter motor and fuel delivery only when:

- Shuttle lever **(2)** is in the neutral position.
- PTO switch **(3)** is in the "OFF" position.
- Mid PTO lever **(4)** is in the "OFF" position (if equipped)
- Clutch Pedal **(5)** is depressed.

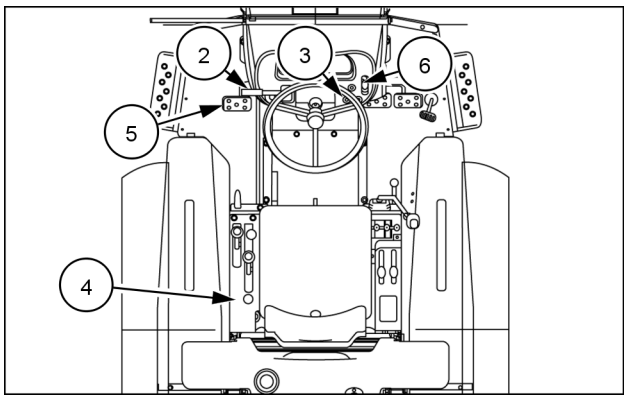
NOTE: *Although the tractor can be started with the operator out of the seat, this practice is not recommended. However, an alarm will sound if the park brake is not engaged, indicating that the operator needs to engage the park brake.*



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1. Push the hand throttle lever **(6)** forward to about the middle position.
2. Turn the key switch to the middle "ON" position and check if the engine oil pressure, battery charge and cold start indicator lights are illuminated. .
3. Wait until the cold start indicator light goes off (approximately ten seconds).
4. Fully and turn the key to the extreme right to the "START" position. As soon as the engine starts, release the key to the middle "ON" position.

   NOTICE: *Do not engage the starting motor continuously for more than 10 seconds. Doing so may cause starting motor failure.*
5. Check if the engine oil pressure and battery charge indicator lights are illuminated, the lights should be off. If any of these indicator lights are illuminated, shut off the engine immediately and check engine for possible problem.



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Cruise control

⚠ WARNING

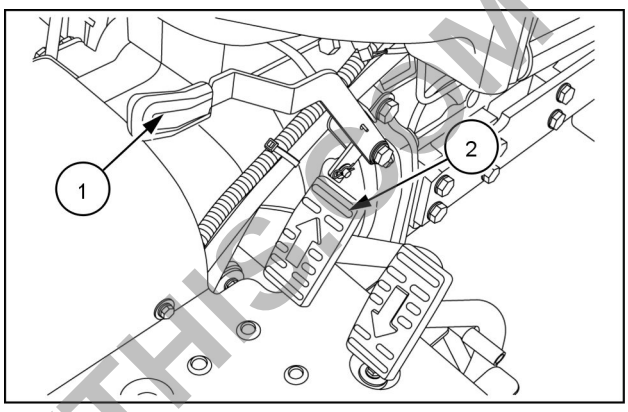
Loss of control hazard!
To maintain optimum control of the machine, do not use the cruise control at high speeds or when roading.
Failure to comply could result in death or serious injury.

W0978A

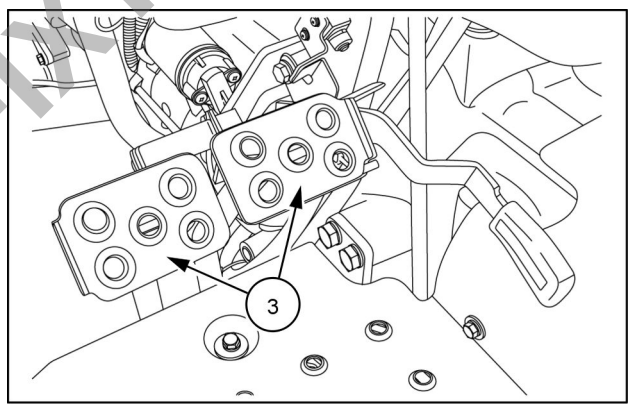
The HST cruise control lever **(1)** is located on the right -hand side of the operator's platform. It is used to maintain a constant forward speed.

NOTE: *The cruise control is only found on HST model tractors.*

When the desired travel speed is reached, push downwards on the cruise control engagement lever while depressing the HST forward pedal **(2)**. The engagement lever will mechanically retain the forward pedal in the desired speed location. To disengage the cruise control, depress the HST forward pedal slightly or depress both brake pedals **(3)**.



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Maintenance action	Tighten	Replace	Change fluid	Cleaning	Check	Grease	Adjust	Drain fluid	Bleed	Test	Page no.
Tail light and brake light bulb - Replace				x							7-50
Turn signal and hazard bulb - Replace				x							7-51
Front wheels toe-in - Check						x					7-53
Belt - Adjust						x					7-54

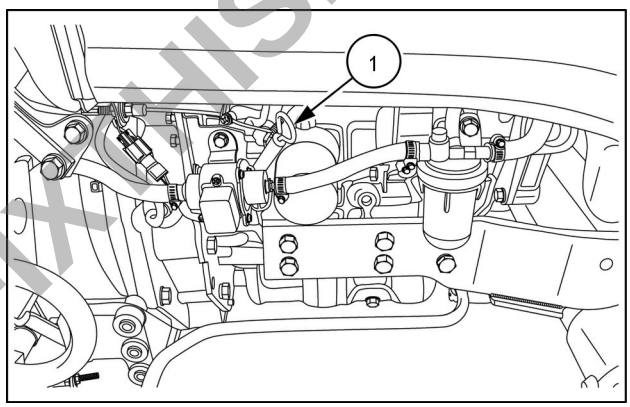
Every 8 hours or daily

Engine lubrication system - Check

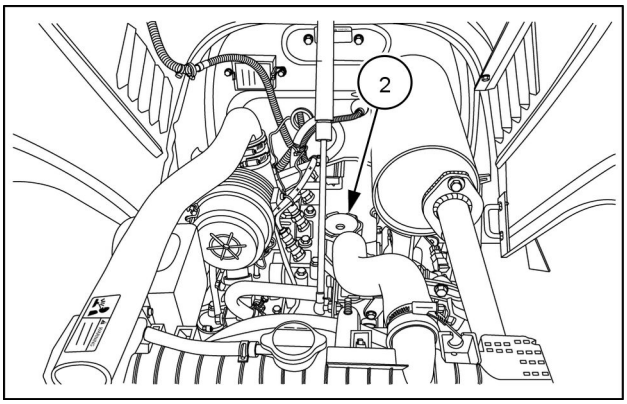
1. Before starting the tractor check the oil level using the dipstick **(1)**.

NOTE: *The dipstick is only accurate if the tractor is not running and sitting on a level surface.*

2. Remove the dipstick from the engine.
3. Wipe the dipstick with a lint-free cloth.
4. Insert the dipstick in the engine.
5. Remove the dipstick and read the oil level
6. The oil level should be between the **(L)** and **(H)**. See figure **3**
7. If the oil level is low, remove the filler cap **(2)** add oil through the filler hole.

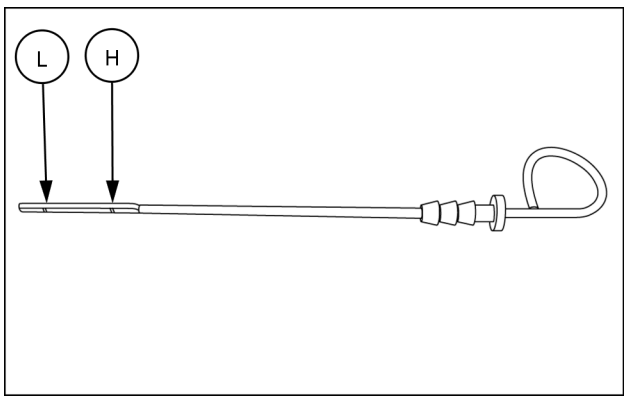


NHIL17CT01436AA 1



NHIL17CT01439AA 2

8. Add enough oil so that the level registers between the two marks on the dipstick. Do not overfill.



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	Model Workmaster™ 25 Hydrostatic/Mechanical
Type of Fuel to Use if Below **4 °C** (**40 °F**)	No. 1-Diesel, Cetane Rating: Minimum 40
Injection Pump:	
Type	Inline
Timing	**16°** BTDC
CLUTCH	
Type	**240 mm** (**9.4 in**) - Transmission 12x12 Trans
Pedal Free-Travel	**20 – 30 mm** (**0.79 – 1.2 in**)
BRAKES	
Type	Wet Disc
2 Disc per Side	**223 mm** (**8.78 in**) x **174 mm** (**6.85 in**)
STEERING	
Type	Power
Turns Lock-to-Lock:	
FWD	3.92 L to R 3.30 R to L
Front Wheel	
Toe-In	**0 – 5 mm** (**0 – 0.20 in**)
Turning Radius w/o Brakes:	
FWD	**3047 mm** (**120 in**) Left turn **3297 mm** (**129.8 in**) Right turn
Steering System Relief Valve Setting	**11720 kPa** (**1700 psi**)
POWER TAKE-OFF	
Type	Independent
Shaft Size:	
Rear PTO	**35 mm** (**1.4 in**)
Mid PTO	**25.4 mm** (**1 in**)
Engine Speed for **540 RPM** Rear PTO Operation	**2510 RPM** - HST Transmission **2510 RPM** - Mechanical Transmission
Engine Speed for **2000 RPM** Mid PTO Operation	**2545 RPM** - HST **2545 RPM** - Mechanical
Horsepower PTO Observed	**12.8 kW** (**17.3 Hp**) - HST **14.3 kW** (**19.4 Hp**) - Mechanical
Direction of Rotation (As viewed from rear of tractor)	
Rear PTO	Clockwise
Mid PTO	Clockwise
HYDRAULIC LIFT SYSTEM	
Type	Open Center
Pump Type	Mechanical
Pump Capacity	**30.0 L/min** (**7.9 US gpm**)
System Relief Valve Setting	**16671 kPa** (**2418 psi**)

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Problem	Possible Cause	Correction
	Engine burning engine oil	Repair engine as needed
	Engine coolant entering engine exhaust	Repair engine as needed
The color of exhaust gas is black.	Air filter clogged	Clean or replace engine air filter
	Excessive fuel supply	Repair fuel injection pump as needed
	Faulty fuel injector	Repair or replace fuel injector
Instrument panel engine oil pressure indicator light is "ON" during operation.	Lack of engine oil	Add engine oil as needed
	Low viscosity of engine oil	Replace oil with proper viscosity type
	Faulty pressure switch	Replace switch
	Faulty engine oil pump	Repair oil pump as needed
	Engine oil filter clogged	Replace the filter
Instrument panel battery charging indicator is "ON" during operation.	Bad electrical connection	Check battery terminals, ground, and repair as needed
	Faulty alternator	Repair or replace alternator as needed
	Faulty battery	Replace battery
	Incorrect fan belt tension or belt broken	Adjust belt tension or replace belt
Engine fault icon is illuminated on the instrument panel.	Electrical fault with the engine speed control unit.	See your NEW HOLLAND dealer for service.
Engine overheating	Lack of coolant	Add coolant as needed
	Fan belt slipping or belt is broken	Adjust belt tension or replace belt
	Dirt attached to the radiator or prescreen	Clean radiator fins or screen as needed

Clutch - Troubleshooting

Problem	Possible Cause	Correction
Clutch slips	Incorrect adjustment of clutch pedal free play	Adjust the pedal free play correctly
	Clutch disc lining worn or broken	Replace clutch disc
Clutch does not release	Excessive clutch pedal free play	Adjust the pedal free play
	Clutch disc damaged	Repair or replace clutch disc

Mechanical service brakes - Troubleshooting

Problem	Possible Cause	Correction
After engaging brake pedal, pedal will not return	Return spring damaged	Replace the spring
	Lack of lubrication in brake shaft linkage parts	Clean and lubricate linkage as needed
	Damaged internal brake parts	Repair internal brake parts as needed
Brake does not work or only one side works.	Incorrect brake pedal free play	Adjust brake pedal free play to correct specification
	Brake disc lining worn or broken	Replace brake discs as needed
	Left/right pedal free play is different	Adjust both brake pedal free play to same specification

Regulated/Low pressure system - Troubleshooting

Problem	Possible Cause	Correction
The three-point linkage will not raise	Lack of transmission / hydraulic oil	Add oil as needed
	Air in the hydraulic suction pipe	Tighten the hydraulic filter and check all hydraulic suction connections
	Hydraulic filter clogged	Replace hydraulic filter

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