



GLOBAL SERVICE LEARNING

TECHNICAL PRESENTATION



14M/16M MOTOR GRADER

Service Training Meeting Guide (STMG)

14M/16M MOTOR GRADER

AUDIENCE

Level II - Service personnel who understands the principles of machine system operation, diagnostic equipment, and procedures for testing and adjusting.

CONTENT

This presentation provides information on the system operation of the electrical system, operator's station, engine, power train, implement, steering, fan, and brake systems. This presentation may be used for self-paced and self-directed training.

OBJECTIVES

After learning the information in this meeting guide, the technician will be able to:

1. locate and identify the major components in the e, operator's station, engine, power train, implement, steering, fan, and brake systems
2. explain the operation of the major components in the systems
3. trace the flow of oil through the systems

REFERENCES

14M Service Manual
16M Service Manual

REN9030
REN9040

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14M/16M MOTOR GRADER



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INTRODUCTION

The 14M/16M Motor Grader has been designed as a direct replacement of the 14H/16H Motor Grader. The 14M/16M meets U.S Environmental Protection Agency (EPA) Tier III and European Union Stage IIIa emissions control standards.

Key new features include:

- Improved operator's station
- C11/C13 ACERT™ Engine
- ECPC controlled power shift countershaft transmission
- Joystick steering
- Electro-hydraulic steering
- Electro-hydraulic implements
- Hydraulic braking system



Technical Specifications

14M

- Serial number prefix: B9J
- Base machine weight: 21,151 kg (46,630 lb)
- Max machine weight: 28,849 kg (63,600 lb)
- Max ground speed forward: 48.3 km/h (30 mph)
- Max ground speed reverse: 38.2 km/h (23.8 mph)
- Engine: 6 cylinder C11 ACERT™ with VHP (Variable Horse Power)
- Net power with VHP: 183 kW - 194 kW/(245 hp - 260 hp)
- Net power with VHP Plus: 183 kW - 209 kW/(245 hp - 280 hp)
- Derating Altitude: 3962 m (13,000 ft)
- Length: 9.4 m (31 ft)
- Width: 2.8 m (9 ft)
- Height: 3.5 m (11.5 ft)

16M

- Serial number prefix: B9H
- Base machine weight: 26,086 kg (57,510 lb)
- Max machine weight: 35,698 kg (78,701 lb)
- Max ground speed forward: 52.5 km/h (32.6 mph)
- Max ground speed reverse: 41.5 km/h (25.8 mph)
- Engine: 6 cylinder C13 ACERT™ with VHP (Variable Horse Power)
- Net power with VHP: 221 kW - 233 kW/(297 hp - 312 hp)
- Net power with VHP Plus: 221 kW - 248 kW/(297 hp - 332 hp)
- Derating Altitude: 4572 m (15,000 ft)
- Length: 9.9 m (33 ft)
- Width: 3.1 m (10 ft)
- Height: 3.7 m (12 ft)

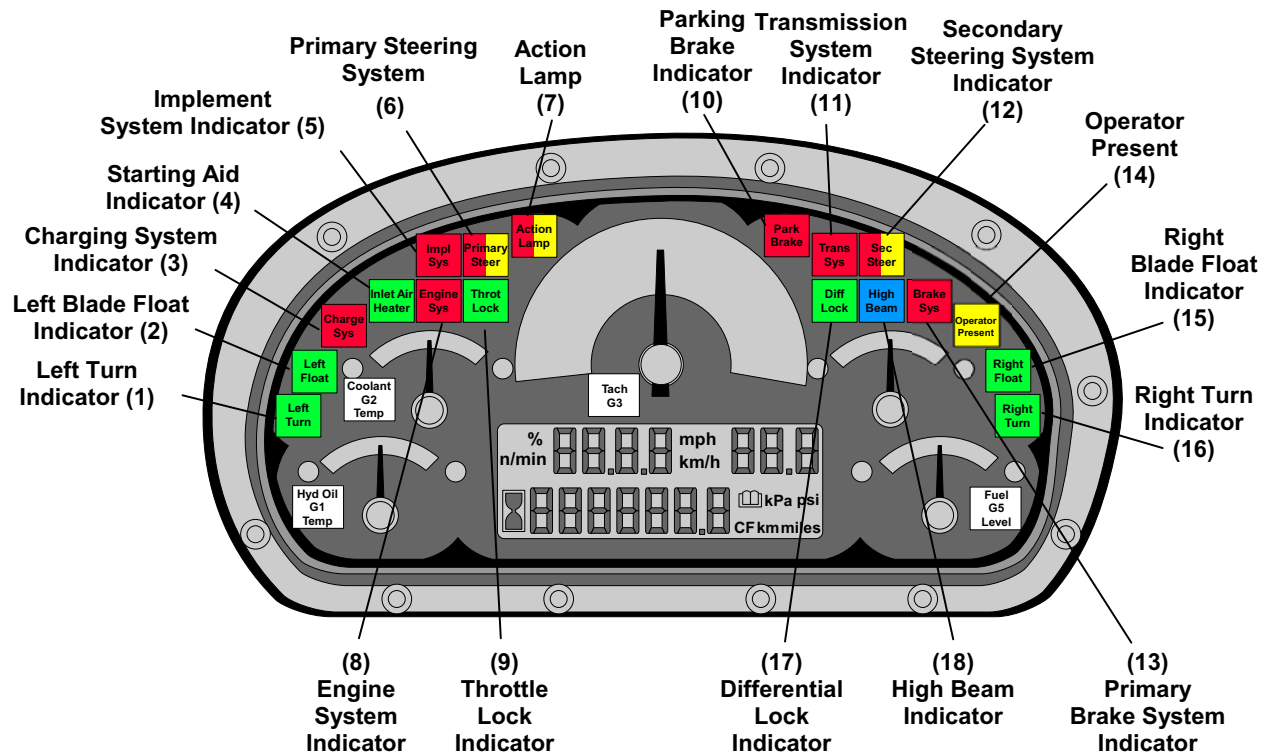


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OPERATOR'S STATION

The redesigned operator's station provides better visibility to the work area. The "M" series operator's station also has new features and improvements over the "H" series.

"M" SERIES MONITORING SYSTEM



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The "M" series dash cluster contains the following:

- Left turn indicator (1): Illuminates when the left turn signal is operating.
- Left blade float indicator (2): Illuminates when the left blade control valve is in the float position.
- Charging system indicator (3): Illuminates when there is a problem with the charging system.
- Starting aid (active) indicator (4): Illuminates when the starting aid is on.
- Implement system (malfunction) indicator (5): Illuminates when the implement system has an active diagnostic or if the optional AccuGrade™ system has an active diagnostic.
- Primary steering system indicator (6): Illuminates when the primary steering system has an active diagnostic.
- Action lamp indicator (7): Illuminates when the machine has a serious issue that requires the operator's attention. The action lamp will flash whenever there is a level 2 or level 3 event in any of the machine systems.
- Engine system indicator (8): Informs the operator of the engine status. Illuminates whenever the engine has an active diagnostic.



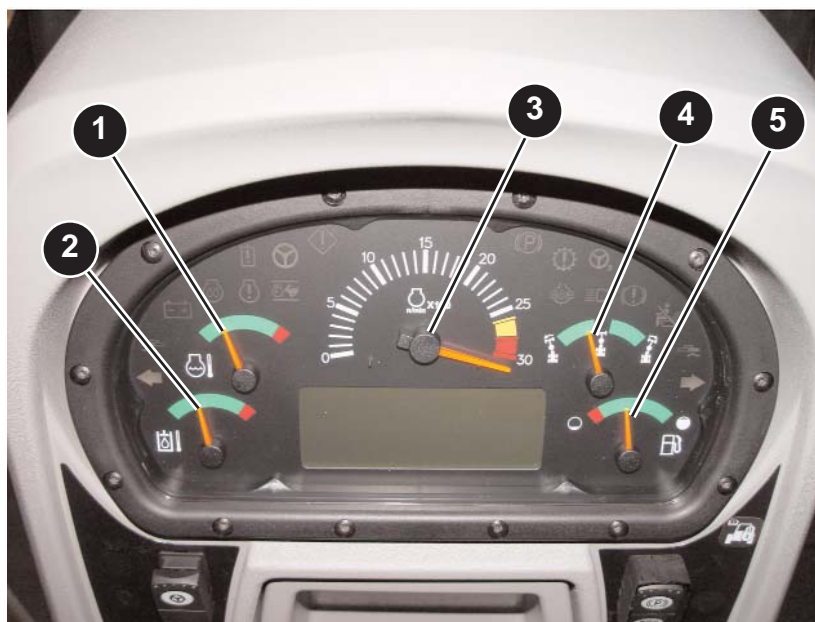
- Throttle lock indicator (9): Informs the operator when the throttle lock is engaged.
- Parking brake indicator (10): Illuminates when the parking brake is engaged.
- Transmission system indicator (11): Illuminates when the Transmission/Chassis ECM has an active diagnostic or event.
- Secondary steering system indicator (12): Illuminates when the secondary steering system has an active diagnostic or event. This indicator will also illuminate when the secondary steering system is active.
- Primary brake system indicator (13): Illuminates when the brake system has an active diagnostic.
- Operator present indicator (14): Illuminates when the operator is not present.

NOTE: *The operator is considered **present** if any of the following is true:*

- *The operator is seated and the Operator in Seat switch recognizes operator as present.*
- *The Transmission Output Speed (TOS) is not zero.*
- *The Actual Gear is not Neutral.*
- *The Inching Pedal is pressed more than 90%.*

*The operator is considered **not present** if all of the following are true:*

- *The Operator in Seat switch does not detect operator presence or the switch is faulted.*
 - *The TOS is zero.*
 - *The Actual Gear is neutral.*
 - *The Inching Pedal is not pressed.*
-
- Right blade float indicator (15): Illuminates when the right blade control valve is in the float position.
 - Right turn indicator (16): Illuminates when the right turn signal is operating.
 - Differential lock indicator (17): Illuminates when the differential lock is engaged.
 - High beam indicator (18): Illuminates when the high beams are on.



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The monitor contains the following:

- Coolant temperature gauge (1)
- Hydraulic oil temperature gauge (2)
- Tachometer (3)
- Articulation angle (4)
- Fuel gauge (5)

When the key start switch is turned to the ON position, the dash cluster will perform a three second self test. During this test all alert indicators will illuminate, and the gauges will do a single sweep.

Sometimes the data needed for an indicator is unknown. This can be due to data link communication problems or active sensor diagnostics. Effects of unknown data at the dash cluster are as follows:

- When data needed for an indicator is unknown the indicator will be illuminated.
- When data needed for a gauge is unknown the gauge will be driven to its red zone.
- When data needed for the LCD is unknown the LCD will either be blank or display "---".
- When there is a Messenger to dash cluster communication problem all indicators will be off, all gauges will point to the left, and the action lamp will blink amber.