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This section is for the following models:

\$30FT, \$35FT, \$40FTS [E010];

\$H1.6FT, \$H1.8FT, \$H2.0FTS (H30FT, H35FT, H40FTS) [F001];

\$\$S2.0-3.5FT (\$40-70FT, \$55FTS) [F187];

\$\$S4.0, 4.5, 5.5FT, \$5.5FTS (\$80, 100, 120FT; \$80, 100FTBCS;

\$\$S120FTS; \$S120FTPRS) [G004];

\$\$H2.0-3.5FT (H40-70FT) [L177];

\$H4.0FT5/FT6; \$H4.5FTS5, \$H4.5FT6; \$H5.0-5.5FT (H80, 90, 100, 110, 120FT) [N005, P005];

\$\$H6.0FT, \$H7.0FT; (H135FT, H155FT) [H006, J006];

\$\$S6.0FT, \$7.0FT, (\$135FT, \$155FT) [D024, E024]\$

8000 SRM 1134 Description

Description

This section is written assuming no experience with electronic controllers. The menu progressions indicate how many key presses it will take to get to a given screen, versus detailing out every screen you would see. Refer to Table 1 for calibration procedures. Refer to Table 2 for an example of how to read calibration procedures.

NOTE: The calibration procedures described in this SRM may have to be repeated when any on-board controllers, sensors, or related components are replaced.

Table 1. Calibration Procedures

	When	Procedure is U	Jsed:					
Proc_Cal/Procedure	All Units	3 Functions Electronic- Hydraulic Valves	4 Functions Electronic- Hydraulic Valves	5 Functions Electronic- Hydraulic Valves	Mazda Engine w/Electronic 1-Speed Transmission	Units w/Load Weight Display	Electronic Transmission (Basic & L1)	Electronic Extended Function 3-Speed (L2-2)
001 Service Password Entry	X							
002 Hydraulic Valve Calibration Warm Up and Air Bleed		X	X	X				
003 Save and Exit	X							
004 Lift Valve Output Threshold		X	X	X				
005 Lower Valve Output Threshold		X	X	X				
006 Tilt Back Valve Output Threshold		X	X	X				
007 Tilt Forward Valve Output Threshold		X	X	X				
008 Aux 1 Dir A Valve Output Threshold		X	X	X				
009 Aux 1 Dir B Valve Output Threshold		X	X	X				
010 Aux 2 Dir A Valve Output Threshold			X	X				
011 Aux 2 Dir B Valve Output Threshold			X	X				
012 Aux 3 Dir A Valve Output Threshold				X				
013 Aux 3 Dir B Valve Output Threshold				X				
014 Load Weight Zero Point						X		
015 Loaded Weight Calibration						X		
016 Transmission Valve Calibration (Basic & L1)		_					X	

Description 8000 SRM 1134

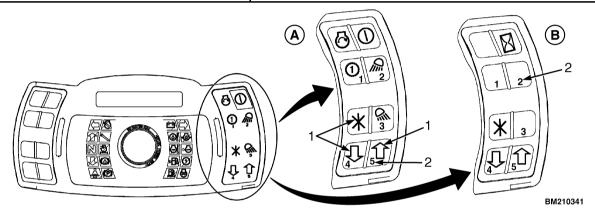
Table 1. Calibration Procedures (Continued)

	When Procedure is Used:							
Proc_Cal/Procedure	All Units	3 Functions Electronic- Hydraulic Valves	4 Functions Electronic- Hydraulic Valves	5 Functions Electronic- Hydraulic Valves	Mazda Engine w/Electronic 1-Speed Transmission	Units w/Load Weight Display	Electronic Transmission (Basic & L1)	Electronic Extended Function 3-Speed (L2-2)
016A Transmission Valve Calibration (L2)								X
019 Mazda LP and Gas Acceleration Pedal Adjustment					X			
025 Hydraulic Valve Pressure Gage Installation		X	X	X				
026 Travel Speed Calibration							X	X

8000 SRM 1134 Description

Table 2. How to Read Calibration Procedure

Proc_Cal_XXX	Number and title of calibration procedure.
Calibration Order	Calibration procedures that must be completed before this procedure, if any.
When to Perform	Performed either during initial manufacture or after component changes.
Why Perform	Description of why the procedure is performed.
Proc_Cal_001: Service Password Entry Proc_Cal_002: Hydraulic Valve Calibration Warm Up	Calibration procedures that must be completed before this procedure, if any.
Action	Actions to perform other than calibration steps. Numbered when needed for clarification.



- **A.** TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS
- **B.** TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS
- 1. SYMBOLS USED IN CALIBRATION PROCEDURES
- 2. NUMBERS FOR SERVICE PASSWORD ENTRY SEE PROC_CAL_001

Step 1: Press * One Time	Calibration steps.
You will see:	
Passwords	
Enter Password	
Step 2: Press * One Time	
You will see:	
Enter Password	
Information	Information to assist in completion of calibration procedure.

NOTE: Perform all actions and calibration steps in the order shown.

Proc Cal 001: Service Password Entry

WHEN TO PERFORM

Performed when any service menu-related items must be performed.

WHY PERFORM

Service-related items are protected from inadvertent access. This procedure allows the service menus to be accessed.

HOW TO PERFORM



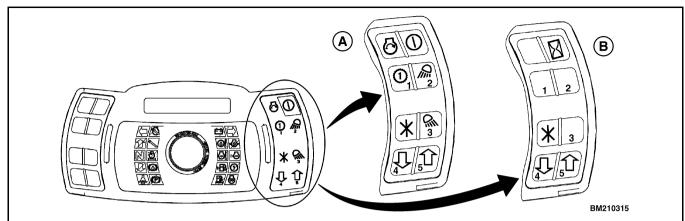
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 3 for the procedures on how to perform Pro Cal 001: Service Password Entry.

Table 3. Proc_Cal_001: Service Password Entry



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

NOTE: The password entry can only be done with the ignition **ON** and the engine **OFF**. If the engine is started, and then turned **OFF**, the password will have to be re-entered.

Action: Ignition ON/EngineOFF					
Step 1: Press * One Time.	You Will See:	Main Menu Passwords			
Step 2: Press * One Time.	You Will See:	Passwords Enter Password			
Step 3: Press * One Time.	You Will See:	Enter Password			
Information: Refer to Number Location on Keypad and Enter Service Password (Default Service Password is 55555).					
Step 4: Press * One Time.	You Will See:	Passwords or Main Menu Enter Password			

Proc Cal 002: Hydraulic Valve Calibration Warm Up and Air Bleed

WHEN TO PERFORM

Performed when any hydraulic calibration items are performed.

CALIBRATION ORDER

- 1. Proc_Cal_025
- 2. Proc Cal 001
- 3. Proc Cal 002

WHY PERFORM

Hydraulic calibrations are the process of setting the hydraulic current levels that result in initial function movement. Pressure and flow are directly related to the hydraulic fluid viscosity which is a function of the fluid temperature. Air, trapped within the lift valve assembly, may produce slight mast movement at engine start. This process ensures that the hydraulic fluid achieves an optimum temperature, and that the air is bled out of the lift valve and cylinders prior to performing calibrations.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 4 for the procedures on how to perform Proc Cal 002: Hydraulic Valve Calibration Warm Up and Air Bleed.

(A)(B) 5 BM210316 E-HYD CONTROL LEVERS LIFT/LOWER 2. TILT *AUX 1 OR AUX 2 *AUX 2 OR AUX 3 *FOURTH LEVER DIRECTION LIFT ↓ DIRECTION BACK ↓ DIRECTION A ↑ DIRECTION A ↑ 6. *THIRD LEVER DIRECTION LOWER ↑ DIRECTION FWD ↑ DIRECTION B ↓ DIRECTION B ↓ SEAT ARMREST

Table 4. Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed

*AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FUNCTION VALVE WITH CLAMPING ATTACHMENT, AUX 2 IS IN THE THIRD LEVER LOCATION.

B. JOYSTICK

1. TILT BACK

2. AUX 1 DIRECTION A↑ DIRECTION B↓ 3. LIFT ↓
 4. ↑ LOWER

5. AUX 2 DIRECTION A ↑ DIRECTION B ↓ TILT FORWARD
 SEAT ARMREST

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation and Proc_Cal_001: Service Password Entry before proceeding.

Information: First determine if it is necessary to bleed the air out of the lift valve and cylinders. The hoist valve air bleed procedure is necessary if the carriage moves slightly (**approximately 1/4 inch**) when the engine is started, without activation of the lift control. The cylinder air bleed procedure is necessary if the cylinders have not been previously cycled, or if the left function is not operating smoothly.

NOTE: Optional for initial manufacture.

Information: To ensure that the oil temperature is optimal, warm up the hydraulic fluid until it is within a range of 50 to 65°C (12 to 149°F).

Action:

Ignition: ON
Engine: High Idle
Transmission: Neutral
Park Brake: ON

Step 1: (Optional hoist valve air bleed): Activate Lift Control from neutral to full lift and back to neutral at a rate of one or two times per second. Repeat until the lift function is operating smoothly and there is no mast movement upon engine start.

Table 4. Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed (Continued)

Step 2: (Optional cylinder air bleed): Cycle function completely two or three times; repeat if necessary.

NOTE: Optional for initial manufacture.

Step 3: (Required warm up for service): Activate tilt at relief pressure until the hydraulic fluid temperature is within the optimum range 50 to 65°C (12 to 149°F).

Step 4: Proceed to calibrate desired electro-hydraulic functions.

Information: You do not need to **START** or turn **OFF** the vehicle if you are performing other procedures.

Proc_Cal_003: Save and Exit

WHEN TO PERFORM

Must be performed after any calibration except Procedure 016, Transmission Valve Calibration.

WHY PERFORM

Calibration processes do not automatically save their results until this routine is run.

HOW TO PERFORM

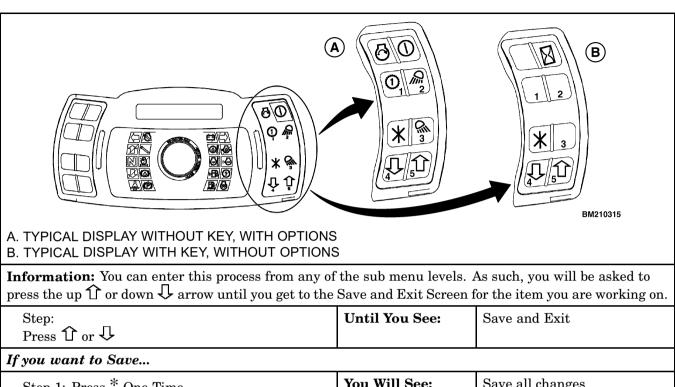


WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks. Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 5 for the procedures on how to perform Proc_Cal_003: Save and Exit.

Table 5. Proc_Cal_003: Save and Exit



Step: Press ↑ or ↓	Until You See:	Save and Exit
If you want to Save		
Step 1: Press * One Time	You Will See:	Save all changes and exit Menu - Yes
Step 2: Press * One Time		
If you DO NOT want to Save		
Step 1: Press * One Time	You Will See:	Save all changes and exit Menu - Yes
Step 2: Press ♥ One Time	You Will See:	Cancel Save Return to Menu
Step 3: Press * One Time	·	
You will return to the menu level whe	re you last were.	

Proc Cal 004: Lift Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when lift valve components have been serviced, or when the lift valve is replaced.

CALIBRATION ORDER

- **1.** Proc Cal 025
- Proc_Cal_001
- Proc Cal 002
- Proc_Cal_004

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

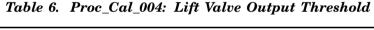
HOW TO PERFORM

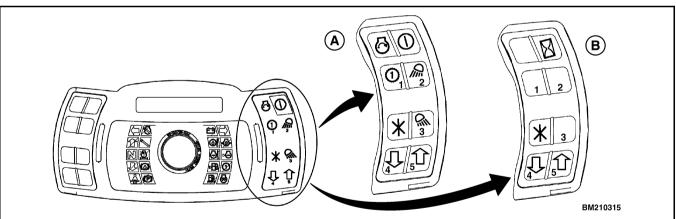
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 6 for the procedures on how to perform Proc Cal 004: Lift Valve Output Threshold.





A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

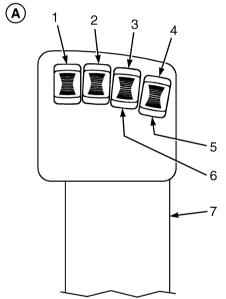
Information: Pressure Method: Perform actions 1, 2, 3, 4, and 6.

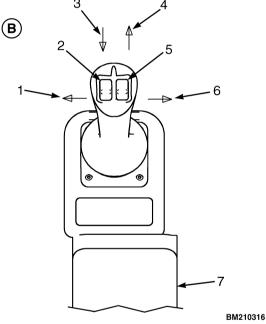
Visual Method: Perform actions 2, 3, 5, and 6.

Information: Leave truck running at idle after performing Proc_Cal_002.

Table 6. Proc_Cal_004: Lift Valve Output Threshold (Continued)

Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment.	You Will See:	Main Menu Passwords
Step 1: Press 🛈 or 🎝	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press * One Time	You Will See:	Lift Valve Output Press * at Creep





- A. E-HYD CONTROL LEVERS
- 1. LIFT/LOWER
 DIRECTION LIFT ↓
 DIRECTION LOWER ↑
- 2. TILT DIRECTION BACK ↓ DIRECTION FWD ↑
- 3. *AUX 1 OR AUX 2 DIRECTION A ↑ DIRECTION B ↓
- 4. *AUX 2 OR AUX 3 DIRECTION A ↑ DIRECTION B ↓
- 5. *FOURTH LEVER 6. *THIRD LEVER

SEAT ARMREST

*AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FUNCTION VALVE WITH CLAMPING ATTACHMENT, AUX 2 IS IN THE THIRD LEVER LOCATION.

- B. JOYSTICK
- 1. TILT BACK
- 2. AUX 1 DIRECTION A↑ DIRECTION B↓
- 3. LIFT ↓
 4. ↑ LOWER
- 5. AUX 2 DIRECTION A↑ DIRECTION B↓
- 6. TILT FORWARD7. SEAT ARMREST

Action 3: SLOWLY Activate (Feather) Lift Control.....

Action 4: Until the pressure is 0.7 MPa (100 psi) above the standby pressure. Note that the pressure reading may oscillate. Hold control steady and.....

Action 5: WATCH for Attachment Movement. When it first starts to move slowly, HOLD control steady and.....

Table 6. Proc_Cal_004: Lift Valve Output Threshold (Continued)

Press * One Time while holding control.		
Action 6: STOP activating the Lift Control. LOOK at the disp Go to the calibration step below that matches your display.	lay.	
If You See	Result out of range Repeat Calibration	
Press * One Time	You Will See:	Lift Valve Output Press * at Creep
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.		
If You See	Lower Valve Outpo Press * at Creep	ut
To Continue with Calibrations	•	
Go to Action 2 of Proc_Cal_005.		
To Quit and Save		
Step 1: Press 🛈 or 🗸	Until You See:	Lower Valve Output Back 1 Level
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level
Perform Proc_Cal_003: Save and Exit.		

Proc_Cal_005: Lower Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when lower valve components have been serviced, or when the lower valve is replaced.

CALIBRATION ORDER

- 1. Proc_Cal_001
- **2.** Proc_Cal_002
- **3.** Proc_Cal_005

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 7 for the procedures on how to perform Pro Cal 005: Lower Valve Output Threshold.

Table 7. Proc_Cal_005: Lower Valve Output Threshold

A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_001: Service Password Entry and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." This procedure cannot be performed by using the pressure method.

Information: Leave truck running at idle after performing Proc Cal 002. Action 1: Activate Lift Control to Position Attachment 0.6 m (2 ft) You Will See: Main Menu up with no load on the forks/attachment. If the forks/attachment Passwords are/is not installed, ensure that the attachment will lower when the control is activated. It may be necessary to apply a load (approximately 90 kg (200 lb) to the attachment. Until You See: Main Menu Step 1: Press **1** or **□** Calibrations Step 2: Press * One Time Calibrations You Will See: Lift Valve Output Until You See: Calibrations Lower Valve Output Step 4: Press * One Time Lower Valve Output You Will See: Press * at Creep

Table 7. Proc_Cal_005: Lower Valve Output Threshold (Continued)

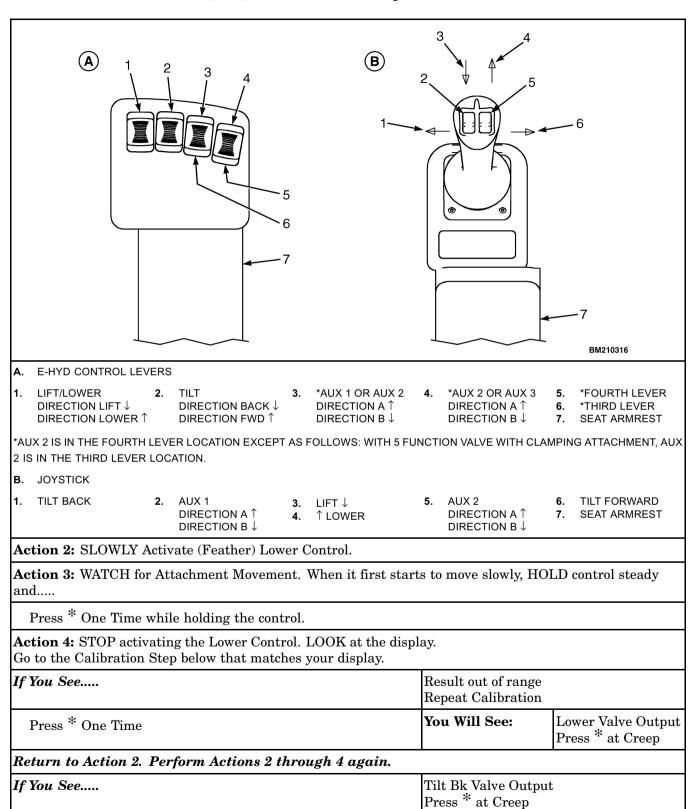


Table 7. Proc_Cal_005: Lower Valve Output Threshold (Continued)

To Continue with Calibrations		
Go to Action 3 of Proc_Cal_006.		
To Quit and Save		
Step 1: Press Û or ↓	Until You See:	Tilt Bk Valve Output Back 1 Level
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level
Perform Proc_Cal_003: Save and Exit.	<u>.</u>	

Proc Cal 006: Tilt Back Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when tilt back valve components have been serviced, or when the tilt back valve is replaced.

CALIBRATION ORDER

- **1.** Proc Cal 025
- Proc_Cal_001
- Proc Cal 002
- Proc_Cal 006

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



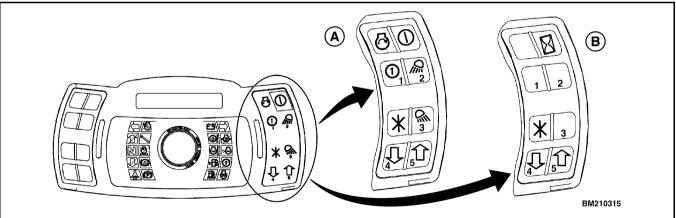
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 8 for the procedures on how to perform Proc Cal 006: Tilt Back Valve Output Threshold.

Table 8. Proc Cal 006: Tilt Back Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information: Pressure Method: Perform Actions 1, 2, 3, 4, and 6.

Visual Method: Perform Actions 2, 3, 5, and 6.

Information: Leave truck running at idle after performing Proc_Cal_002.

Table 8. Proc_Cal_006: Tilt Back Valve Output Threshold (Continued)

Action 1: With the truck running, note the pressure reading (sta	andby pressure).			
Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the tilt control to position the function in the middle of the range (mast is vertical).	You Will See:	Main Menu Passwords		
Step 1: Press 🛈 or 🎝	Until You See:	Main Menu Calibrations		
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output		
Step 3: Press 🛈 or 🎝	Until You See:	Calibrations Tilt Bk Valve Output		
Step 4: Press * One Time	You Will See:	Tilt Bk Valve Output Press * at Creep		
A 1 2 3 4 5 5 6 6 7 7	3 4 5	— 6 — 7 BM210316		
A. E-HYD CONTROL LEVERS1. LIFT/LOWER2. TILT3. *AUX 1 OR AUX 2	4. *AUX 2 OR AUX 3	5. *FOURTH LEVER		
DIRECTION LIFT \downarrow DIRECTION BACK \downarrow DIRECTION A \uparrow DIRECTION LOWER \uparrow DIRECTION FWD \uparrow DIRECTION B \downarrow	DIRECTION A ↑ DIRECTION B ↓	6. *THIRD LEVER7. SEAT ARMREST		
*AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FU 2 IS IN THE THIRD LEVER LOCATION.	JNCTION VALVE WITH CLA	MPING ATTACHMENT, AUX		
B. JOYSTICK				
1. TILT BACK 2. AUX 1 3. LIFT \downarrow DIRECTION A \uparrow 4. \uparrow LOWER DIRECTION B \downarrow	5. AUX 2 DIRECTION A ↑ DIRECTION B ↓	6. TILT FORWARD7. SEAT ARMREST		

Action 3: SLOWLY Activate (Feather) Tilt Back Control.....

Table 8. Proc_Cal_006: Tilt Back Valve Output Threshold (Continued)

Action 4: Until the pressure is just above the standby pressure Note that the pressure reading may oscillate. Hold control stead		on an analog gage).				
Action 5: WATCH for Attachment Movement. When it first star and	ts to move slowly, H	OLD control steady				
Press * One Time while holding the control.						
Action 6: STOP activating the Tilt Bk Control. LOOK at the dis Go to the Calibration Step below that matches your display.	play.					
If You See	Result out of range Repeat Calibration					
Press * One Time	Press * One Time You Will See: Tilt Bk Valve Ou Press * at Creep					
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.						
If You See	Tilt Fw Valve Outp Press * at Creep	out				
To Continue with Calibrations	•					
Go to Action 3 of Proc_Cal_007.						
To Quit and Save						
Step 1: Press 🛈 or 🗸	Until You See:	Tilt Fw Valve Output Back 1 Level				
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level				
Perform Proc_Cal_003: Save and Exit.						

Proc_Cal_007: Tilt Forward Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when tilt forward valve components have been serviced, or when the tilt forward valve is replaced.

CALIBRATION ORDER

- 1. Proc_Cal_025
- **2.** Proc_Cal_001
- **3.** Proc_Cal_002

4. Proc_Cal_007

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



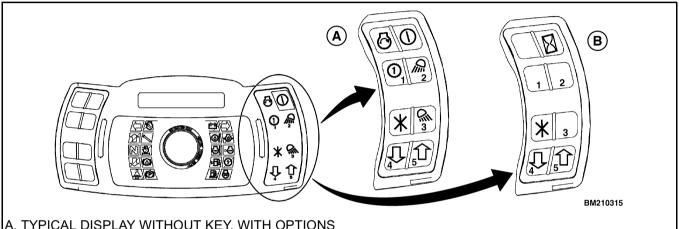
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 9 for the procedures on how to perform Proc Cal 007: Tilt Forward Valve Output Threshold.

Table 9. Proc Cal 007: Tilt Forward Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY. WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc Cal 002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

Information: Leave truck running at idle after performing Proc_Cal_002.

Action 1: With the truck running, note the pressure reading (standby pressure).

Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the tilt control to position the function in the middle of the range (mast is vertical).	You Will See:	Main Menu Passwords
Step 1: Press ᡠ or ↓		Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output

Table 9. Proc_Cal_007: Tilt Forward Valve Output Threshold (Continued)

_	1	
Step 3: Press 🛈 or 🗸	Until You See:	Calibrations Tilt Fw Valve Output
Step 4: Press * One Time	You Will See:	Tilt Fw Valve Output Press * at Creep
A 2 3 4 5 5 6 6 7 7	3	5 6 DM210316
A. E-HYD CONTROL LEVERS 1. LIFT/LOWER 2. TILT DIRECTION LIFT ↓ DIRECTION BACK ↓ DIRECTION A DIRECTION LOWER ↑ DIRECTION FWD ↑ DIRECTION B	↑ DIRECTION	A ↑ 6. *THIRD LEVER
*AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 2 IS IN THE THIRD LEVER LOCATION.		
B. JOYSTICK 1. TILT BACK 2. AUX 1 3. LIFT ↓ DIRECTION A ↑ 4. ↑ LOWER DIRECTION B ↓	5. AUX 2 DIRECTION DIRECTION	
Action 3: SLOWLY Activate (Feather) Tilt FWD Control Action 4: Until the pressure is just above the standby press Note that the pressure reading may oscillate. Hold control s Action 5: WATCH for Attachment Movement. When it first and Press * One Time while holding the control. Action 6: STOP activating the Tilt Fw Control. LOOK at the	teady and starts to move slow	
Go to the Calibration Step below that matches your display. If You See	Result out of rang Repeat Calibration	

Table 9. Proc_Cal_007: Tilt Forward Valve Output Threshold (Continued)

Press * One Time	You Will See:	Tilt Fw Valve Output Press * at Creep			
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.					
If You See Aux 1 Valve Output Dir A Press * at Creep					
To Continue with Calibrations					
Go to Action 3 of Proc_Cal_008.					
To Quit and Save					
Step 1: Press 🛈 or 🗸	Until You See:	Aux 1 Valve Output Dir A Back 1 Level			
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level			
Perform Proc_Cal_003: Save and Exit.	•				

Proc_Cal_008: Aux 1 Dir A Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when Aux 1 Dir A valve components have been serviced, or when the Aux 1 Dir A valve is replaced.

CALIBRATION ORDER

- 1. Proc Cal 025
- 2. Proc Cal 001
- **3.** Proc_Cal_002
- 4. Proc Cal 008

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



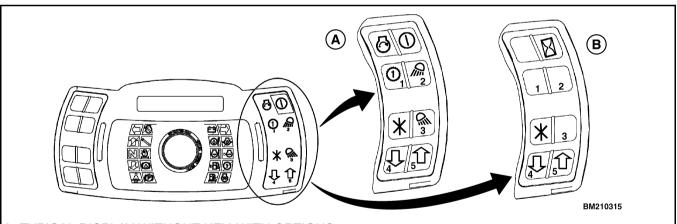
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 10 for the procedures on how to perform Pro_Cal_008: Aux 1 Dir A Valve Output Threshold.

Table 10. Proc Cal 008: Aux 1 Dir A Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

DIRECTION B ↓

Table 10. Proc_Cal_008: Aux 1 Dir A Valve Output Threshold (Continued)

Information: Leave truck running at idle after performing I	Proc_Cal_002.	
Action 1: With the truck running, note the pressure reading	(standby pressure)	
Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the Aux 1 control to position the function in the middle of the range.	You Will See:	Main Menu Passwords
Step 1: Press û or ↓	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press 🛈 or 🗸	Until You See:	Calibrations Aux 1 Valve Output Dir A
Step 4: Press * One Time	You Will See:	Aux 1 Valve Output Dir A Press * at Creep
A. E-HYD CONTROL LEVERS		5 6 BM210316
1. LIFT/LOWER 2. TILT 3. *AUX 1 OR AUX DIRECTION LIFT ↓ DIRECTION BACK ↓ DIRECTION A ↑ DIRECTION LOWER ↑ DIRECTION FWD ↑ DIRECTION B ↓	DIRECTION	A ↑ 6. *THIRD LEVER
*AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 2 IS IN THE THIRD LEVER LOCATION.	5 FUNCTION VALVE WI	TH CLAMPING ATTACHMENT, AUX
1. TILT BACK 2. AUX 1 DIRECTION A ↑ DIRECTION B ↓ 3. LIFT ↓ LOWER	5. AUX 2 DIRECTION DIRECTION	

DIRECTION B ↓

Press * One Time while holding the control.

(B) (A)BM210316 **JOYSTICK TILT BACK** AUX 1 LIFT ↓ AUX 2 **TILT FORWARD** DIRECTION A 1 DIRECTION A ↑ SEAT ARMREST ↑ LOWER DIRECTION B ↓ DIRECTION B ↓ **Action 3:** SLOWLY Activate (Feather) Aux 1 Dir A Control.... **NOTE:** Optional for initial manufacture: Use the same pressure setting for both Dir A and Dir B of this func-

Table 10. Proc Cal 008: Aux 1 Dir A Valve Output Threshold (Continued)

tion to provide uniform flow outputs.

Action 4: Until the pressure is just above the standby pressure (as the needle moves on an analog gage). Note that the pressure reading may oscillate. Hold control steady and.....

Action 5: WATCH for Attachment Movement. When it first starts to move slowly, HOLD control steady and.....

Action 4: STOP activating the Aux 1 Dir A Control. LOOK at the display. Go to the Calibration Step below that matches your display.							
If You See Result out of range Repeat Calibration							
Press * One Time	You Will See:	Aux 1 Valve Output Dir A Press * at Creep					
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.							

Aux 1 Valve Output Dir B If You See..... Press * at Creep To Continue with Calibrations.....

Go to Action 3 of Proc_Cal_009.					
To Quit and Save					
Step 1: Press 🛈 or 🗸	Until You See:	Aux 1 Valve Output Dir B Back 1 Level			
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level			
Perform Proc_Cal_003: Save and Exit.					

Proc Cal 009: Aux 1 Dir B Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when Aux 1 Dir B valve components have been serviced, or when the Aux 1 Dir B valve is replaced.

CALIBRATION ORDER

- **1.** Proc Cal 025
- Proc Cal 001
- Proc Cal 002
- Proc Cal 009

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



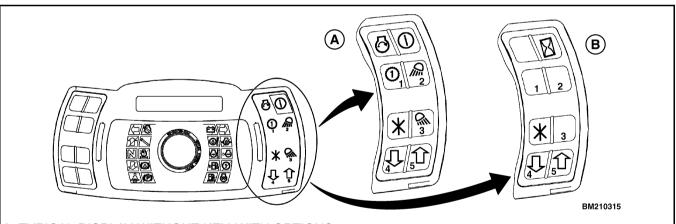
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 11 for the procedures on how to perform Proc Cal 009: Aux 1 Dir B Valve Output Threshold.

Table 11. Proc Cal 009: Aux 1 Dir B Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

Table 11. Proc_Cal_009: Aux 1 Dir B Valve Output Threshold (Continued)

Act	cion 1: With the truck running, note the pressure reading (sta	andby press	sure).		
up	Sion 2: Activate Lift Control to Position Atachment 0.6 m (2 ft with no load on the forks/attachment. Activate the Aux 1 trol to position the function in the middle of the range.	You Will	See:		in Menu swords
S	Step 1: Press 🛈 or 🗸	Until You	ı See:		in Menu ibrations
S	Step 2: Press * One Time	You Will			ibrations Valve Output
Š	Step 3: Press 🗘 or 🗸	Until You			ibrations x 1 Output Dir I
S	Step 4: Press * One Time	You Will		Aux Pre	x 1 Output Dir F ss * at Creep
Α.	E-HYD CONTROL LEVERS	2	5	<u> </u>	7 вм210316
1.	LIFT/LOWER 2. TILT DIRECTION LIFT ↓ DIRECTION BACK ↓ DIRECTION FWD ↑ DIRECTION B ↓ 3. *AUX 1 OR AUX 2 DIRECTION A ↑ DIRECTION B ↓		TION A ↑	6.	*FOURTH LEVER *THIRD LEVER SEAT ARMREST
2 IS	K 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FU IN THE THIRD LEVER LOCATION.	JNCTION VALV	'E WITH CLAM	/PING	S ATTACHMENT, AU
	JOYSTICK				
1.	TILT BACK 2. AUX 1 3. LIFT \downarrow DIRECTION A \uparrow 4. \uparrow LOWER	5. AUX 2 DIRECT			TILT FORWARD SEAT ARMREST

Table 11. Proc_Cal_009: Aux 1 Dir B Valve Output Threshold (Continued)

Action 5: WATCH for Attachment Movement. When it first starts to move slowly, HOLD control steady and Press * One Time while holding the control. Action 6: STOP activating the Aux 1 Dir B Control. LOOK at the display. Go to the Calibration Step below that matches your display. If You See Result out of range Repeat Calibration Press * One Time You Will See: Aux 1 Valve Output Dir B Press * at Creep Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again. If You See Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press \(\hat{\text{1}}\) or \(\frac{1}{\text{4}}\) or \(\frac{1}{\tex	NOTE: Optional for initial manufacture: Use the same pressure setion to provide uniform flow outputs. Action 4: Until the pressure is just above the standby pressure (Note that the pressure reading may oscillate. Hold control steady	as the needle moves o						
Action 6: STOP activating the Aux 1 Dir B Control. LOOK at the display. Go to the Calibration Step below that matches your display. If You See Press * One Time You Will See: Result out of range Repeat Calibration Aux 1 Valve Output Dir B Press * at Creep Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again. If You See Aux 2 Valve Output Dir A Press * at Creep To Continue with Calibrations Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press \(\hat{\text{1}}\) or \(\psi\) Until You See: Aux 2 Valve Output Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level			LD control steady					
Go to the Calibration Step below that matches your display. If You See Press * One Time Result out of range Repeat Calibration You Will See: Aux 1 Valve Output Dir B Press * at Creep Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again. If You See Aux 2 Valve Output Dir A Press * at Creep To Continue with Calibrations Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press î or I Until You See: Step 2: Press * One Time You Will See: Calibrations Back 1 Level	Press * One Time while holding the control.							
Repeat Calibration Press * One Time You Will See: Aux 1 Valve Output Dir B Press * at Creep Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again. If You See Aux 2 Valve Output Dir A Press * at Creep To Continue with Calibrations Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press \(\hat{\text{1}}\) or \(\frac{\text{1}}{\text{0}}\) Until You See: Aux 2 Valve Output Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level	Action 6: STOP activating the Aux 1 Dir B Control. LOOK at the Go to the Calibration Step below that matches your display.	e display.						
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again. If You See Aux 2 Valve Output Dir A Press * at Creep To Continue with Calibrations Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press ↑ or ↓ Until You See: Aux 2 Valve Output Dir A Press * at Creep Vou Will See: Calibrations Back 1 Level	,							
Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again. If You See Aux 2 Valve Output Dir A Press * at Creep To Continue with Calibrations Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press ↑ or ↓ Until You See: Aux 2 Valve Output Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level	Dir B							
To Continue with Calibrations Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press ↑ or ↓ Until You See: Aux 2 Valve Output Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level	Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.							
Go to Action 3 of Proc_Cal_010. To Quit and Save Step 1: Press ↑ or ↓ Until You See: Aux 2 Valve Output Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level	If You See		Dir A					
To Quit and Save Step 1: Press ↑ or ↓ Until You See: Aux 2 Valve Output Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level	To Continue with Calibrations							
Step 1: Press ↑ or ↓ Step 2: Press * One Time Until You See: Aux 2 Valve Output Dir A Back 1 Level You Will See: Calibrations Back 1 Level	Go to Action 3 of Proc_Cal_010.							
Step 1: Fress 🗆 or 🗸 Dir A Back 1 Level Step 2: Press * One Time You Will See: Calibrations Back 1 Level	To Quit and Save							
Back 1 Level	Dir A							
Perform Proc_Cal_003: Save and Exit.	Dieb 2. Tiess One Time							
	Perform Proc_Cal_003: Save and Exit.							

Proc_Cal_010: Aux 2 Dir A Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when Aux 2 Dir A valve components have been serviced, or when the Aux 2 Dir A valve is replaced.

CALIBRATION ORDER

- 1. Proc_Cal_025
- **2.** Proc_Cal_001
- **3.** Proc_Cal_002

4. Proc_Cal_010

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



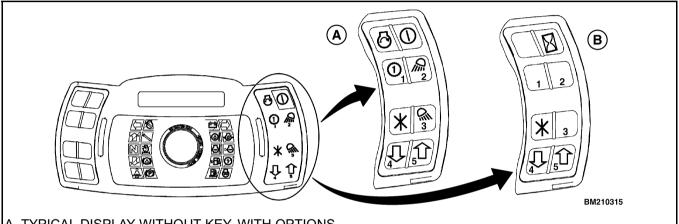
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 12 for the procedures on how to perform Proc Cal 010: Aux 2 Dir A Valve Output Threshold.

Table 12. Proc Cal 010: Aux 2 Dir A Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY. WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc Cal 002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

Information: Leave truck running at idle after performing Proc_Cal_002.

Action 1: With the truck running, note the pressure reading (standby pressure).

5, 1	v 1	
Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the Aux 2 control to position the function in the middle of the range.		Main Menu Passwords
Step 1: Press T or J		Main Menu Calibrations
Step 2: Press * One Time		Calibrations Lift Valve Output

Table 12. Proc_Cal_010: Aux 2 Dir A Valve Output Threshold (Continued)

\$	Step 3: Press 🛈 or	Û				Un	til You See:		librations x 2 Valve Output · A
\$	Step 4: Press * One	e Ti	me			Yo	u Will See:	Dir	x 2 Valve Output A ess * at Creep
	(A) 1	2		5 6 7	(B)	2	5		-7 вм210316
A.	E-HYD CONTROL LEV	ERS							
1.	LIFT/LOWER DIRECTION LIFT ↓ DIRECTION LOWER ↑	2.	TILT DIRECTION BACK↓ DIRECTION FWD↑	3.	*AUX 1 OR AUX 2 DIRECTION A ↑ DIRECTION B ↓	4.	*AUX 2 OR AUX 3 DIRECTION A ↑ DIRECTION B ↓	5. 6. 7.	*FOURTH LEVER *THIRD LEVER SEAT ARMREST
	X 2 IS IN THE FOURTH I IN THE THIRD LEVER			AS F	FOLLOWS: WITH 5 FUI	NCTI	ON VALVE WITH CLAN	//PING	G ATTACHMENT, AUX
В.	JOYSTICK								
1.	TILT BACK	2.	AUX 1 DIRECTION A ↑ DIRECTION B ↓	3. 4.	LIFT ↓ ↑ LOWER	5.	AUX 2 DIRECTION A ↑ DIRECTION B ↓	6. 7.	TILT FORWARD SEAT ARMREST

Action 3: SLOWLY Activate (Feather) Aux 2 Dir A Control.....

NOTE: Optional for initial manufacture: Use the same pressure setting for both Dir A and Dir B of this function to provide uniform flow outputs.

Action 4: Until the pressure is just above the standby pressure (as the needle moves on an analog gage). Note that the pressure reading may oscillate. Hold control steady and.....

Action 5: WATCH for Attachment Movement. When it first starts to move slowly, HOLD control steady and.....

Press * One Time while holding the control.

$Table\ 12.\ Proc_Cal_010:\ Aux\ 2\ Dir\ A\ Valve\ Output\ Threshold\ (Continued)$

Action 6: STOP activating the Aux 2 Dir A Control. LOOK Go to the Calibration Step below that matches your display		
If You See	Result out of range Repeat Calibration	
Press * One Time	You Will See:	Aux 2 Valve Output Dir A Press * at Creep
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.		
If You See	Aux 2 Valve Output Dir B Press * at Creep	
To Continue with Calibrations		
Go to Action 3 of Proc_Cal_011.		
To Quit and Save		
Step 1: Press 🛈 or 🗸	Until You See:	Aux 2 Valve Output Dir B Back 1 Level
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level
Perform Proc_Cal_003: Save and Exit.	•	•

Proc_Cal_011: Aux 2 Dir B Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when Aux 2 Dir B valve components have been serviced, or when the Aux 2 Dir B valve is replaced.

CALIBRATION ORDER

- 1. Proc Cal 025
- 2. Proc_Cal_001
- 3. Proc_Cal_002
- 4. Proc_Cal_011

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



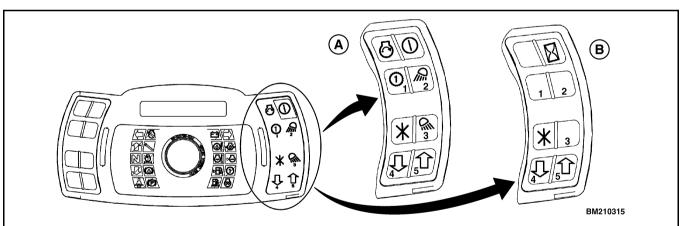
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 13 for the procedures on how to perform Proc_Cal_011: Aux 2 Dir B Valve Output Threshold.

Table 13. Proc Cal 011: Aux 2 Dir B Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated. This is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

Table 13. Proc_Cal_011: Aux 2 Dir B Valve Output Threshold (Continued)

Information: Leave truck running at idle after performing Proc		
Action 1: With the truck running, note the pressure reading (sta	· -	Dr · Nr
Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the Aux 2 control to position the function in the middle of the range.	You Will See:	Main Menu Passwords
Step 1: Press 🛈 or 🗸	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press û or ↓	Until You See:	Calibrations Aux 2 Output Dir F
Step 4: Press * One Time	You Will See:	Aux 2 Output Dir F Press * at Creep
A. E-HYD CONTROL LEVERS		—— 6 —— 7
I. LIFT/LOWER 2. TILT 3. *AUX 1 OR AUX 2	4. *AUX 2 OR AUX 3	5. *FOURTH LEVER
DIRECTION LIFT \downarrow DIRECTION BACK \downarrow DIRECTION A \uparrow DIRECTION LOWER \uparrow DIRECTION FWD \uparrow DIRECTION B \downarrow	DIRECTION A ↑ DIRECTION B ↓	6. *THIRD LEVER7. SEAT ARMREST
AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FUI IS IN THE THIRD LEVER LOCATION.	NCTION VALVE WITH CLA	MPING ATTACHMENT, AL
3. JOYSTICK	- ALIV 0	
I. TILT BACK 2. AUX 1 3. LIFT ↓ DIRECTION A ↑ 4. ↑ LOWER DIRECTION B ↓	5. AUX 2 DIRECTION A ↑ DIRECTION B ↓	6. TILT FORWARD7. SEAT ARMREST

Action 3: SLOWLY Activate (Feather) Aux 2 Dir B Control.....

Table 13. Proc_Cal_011: Aux 2 Dir B Valve Output Threshold (Continued)

NOTE: Optional for initial manufacture: Use the same pressure so tion to provide uniform flow outputs. Action 4: Until the pressure is just above the standby pressure (Note that the pressure reading may oscillate. Hold control steady	as the needle moves o	
Action 5: WATCH for Attachment Movement. When it first start and		LD control steady
Press * One Time while holding the control.		
Action 6: STOP activating the Aux 2 Dir B Control. LOOK at the Go to the Calibration Step below that matches your display.	e display.	
If You See	Result out of range Repeat Calibration	
Press * One Time	You Will See:	Aux 2 Valve Output Dir B Press * at Creep
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.		
If You See	Aux 3 Valve Output Press * at Creep	Dir A
To Continue with Calibrations		
Go to Action 3 of Proc_Cal_012.		
To Quit and Save		
Step 1: Press 1 or \Box	Until You See:	Aux 3 Valve Output Dir A Back 1 Level
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level
Perform Proc_Cal_003: Save and Exit.		

Proc_Cal_012: Aux 3 Dir A Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when Aux 3 Dir A valve components have been serviced, or when the Aux 3 Dir A valve is replaced.

CALIBRATION ORDER

- 1. Proc_Cal_025
- **2.** Proc_Cal_001
- **3.** Proc_Cal_002

4. Proc_Cal_012

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



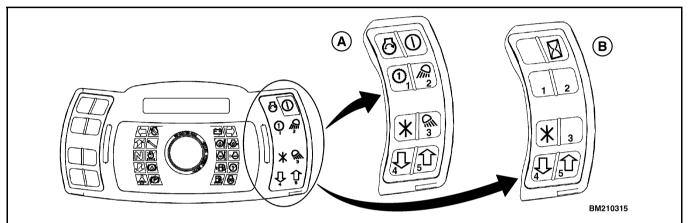
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 14 for the procedures on how to perform Proc Cal 012: Aux 3 Dir A Valve Output Threshold.

Table 14. Proc Cal 012: Aux 3 Dir A Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc Cal 002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

Information: Leave truck running at idle after performing Proc Cal 002.

Action 1: With the truck running, note the pressure reading (standby pressure).

Action 2 Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the Aux 3 control to position the function in the middle of the range.	You Will See:	Main Menu Passwords
Step 1: Press 🛈 or 🗸	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press 🛈 or 🗸	Until You See:	Calibrations Aux 3 Output Dir A

Table 14. Proc_Cal_012: Aux 3 Dir A Valve Output Threshold (Continued)

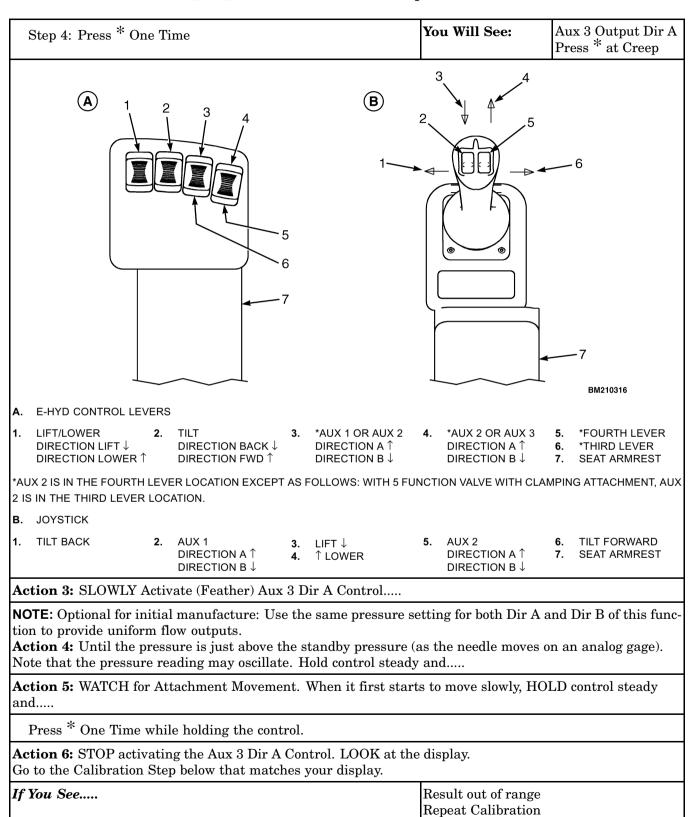


Table 14. Proc_Cal_012: Aux 3 Dir A Valve Output Threshold (Continued)

Press * One Time	You Will See:	Aux 3 Valve Output Dir A Press * at Creep
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.		
If You See	Aux 3 Valve Outpu Press * at Creep	it Dir B
To Continue with Calibrations		
Go to Action 3 of Proc_Cal_013.		
To Quit and Save		
Step 1: Press û or ↓	Until You See:	Aux 3 Valve Output Dir B Back 1 Level
Step 2: Press * One Time	You Will See:	Calibrations Back 1 Level
Perform Proc_Cal_003: Save and Exit.	•	•

Proc Cal 013: Aux 3 Dir B Valve Output Threshold

WHEN TO PERFORM

Performed when troubleshooting procedures indicate, when Aux 3 Dir B valve components have been serviced, or when the Aux 3 Dir B valve is replaced.

CALIBRATION ORDER

- 1. Proc Cal 025
- 2. Proc_Cal_001
- 3. Proc_Cal_002
- 4. Proc_Cal 013

WHY PERFORM

All electro-hydraulic valves have different operating characteristics. One of the key characteristics is the point at which hydraulic flow begins for a given command current. This 'cracking' current is determined by this process.

HOW TO PERFORM



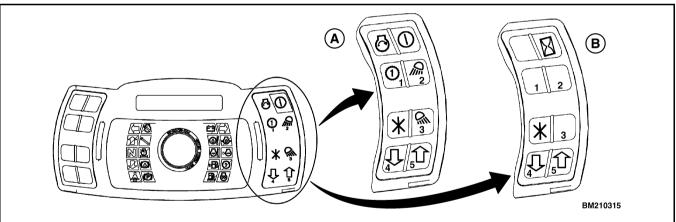
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 15 for the procedures on how to perform Proc_Cal_013: Aux 3 Dir B Valve Output Threshold.

Table 15. Proc Cal 013: Aux 3 Dir B Valve Output Threshold



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation, Proc_Cal_001: Service Password Entry, and Proc_Cal_002: Hydraulic Valve Calibration Warm Up and Air Bleed before proceeding.

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Information:

Pressure Method: Perform Actions 1, 2, 3, 4, and 6. Visual Method: Perform Actions 2, 3, 5, and 6.

Table 15. Proc_Cal_013: Aux 3 Dir B Valve Output Threshold (Continued)

Information: Leave truck running at idle after performing Proc_		
Action 1: With the truck running, note the pressure reading (sta	1	
Action 2: Activate Lift Control to Position Attachment 0.6 m (2 ft) up with no load on the forks/attachment. Activate the Aux 3 control to position the function in the middle of the range.	You Will See:	Main Menu Passwords
Step 1: Press 🛈 or 🗸	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press û or ↓	Until You See:	Calibrations Aux 3 Output Dir I
Step 4: Press * One Time	You Will See:	Aux 3 Output Dir F Press * at Creep
A. E-HYD CONTROL LEVERS		—— 6 —— 7 BM210316
I. LIFT/LOWER 2 . TILT 3 . *AUX 1 OR AUX 2	4. *AUX 2 OR AUX 3	5. *FOURTH LEVER
DIRECTION LIFT \downarrow DIRECTION BACK \downarrow DIRECTION A \uparrow DIRECTION LOWER \uparrow DIRECTION FWD \uparrow DIRECTION B \downarrow	DIRECTION A \uparrow DIRECTION B \downarrow	6. *THIRD LEVER7. SEAT ARMREST
AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FUI IS IN THE THIRD LEVER LOCATION.	NCTION VALVE WITH CLA	MPING ATTACHMENT, AU
3. JOYSTICK		
I. TILT BACK 2. AUX 1 3. LIFT ↓ DIRECTION A ↑ 4. ↑ LOWER DIRECTION B ↓	5. AUX 2 DIRECTION A ↑ DIRECTION B ↓	6. TILT FORWARD7. SEAT ARMREST

Action 3: SLOWLY Activate (Feather) Aux 3 Dir B Control.....

Table 15. Proc_Cal_013: Aux 3 Dir B Valve Output Threshold (Continued)

NOTE: Optional for initial manufacture: Use the same pressure s tion to provide uniform flow outputs. Action 4: Until the pressure is just above the standby pressure (Note that the pressure reading may oscillate. Hold control steady	as the needle moves o	
Action 5: WATCH for Attachment Movement. When it first star and	ts to move slowly, HO	LD control steady
Press * One Time while holding the control.		
Action 6: STOP activating the Aux 3 Dir B Control. LOOK at the Go to the Calibration Step below that matches your display.	e display.	
If You See	Result out of range Repeat Calibration	
Press * One Time	You Will See:	Aux 3 Valve Output Dir B Press * at Creep
Return to Action 3. Pressure Method: Perform Actions 3, 4, and 6 again. Visual Method: Perform Actions 3, 5, and 6 again.		
If You See	Calibrations Aux 3 Valve Output Dir B	
You May Quit and Save		
Perform Proc_Cal_003: Save and Exit.		

Proc Cal 014: Load Weight Zero Point

WHEN TO PERFORM

Performed by the operator when the no-load weight displayed on the screen with the forks in the "weighing position" is not within ± 2 percent of truck capacity. (This is ± 45.4 kg (100 lb) for a 2268 kg (5,000 lb) truck).

This procedure will write a value to the Tare Weight memory location. If you are going to perform Proc_Cal_015 Loaded Weight Calibration, you can skip this procedure as its value will be overwritten.

CALIBRATION ORDER

- 1. Proc_Cal_001
- 2. Proc Cal 014

WHY PERFORM

Allows the system to take into account the weight of the carriage assembly for weight displays.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 16 for the procedures on how to perform Proc Cal 014: Load Weight Zero Point.

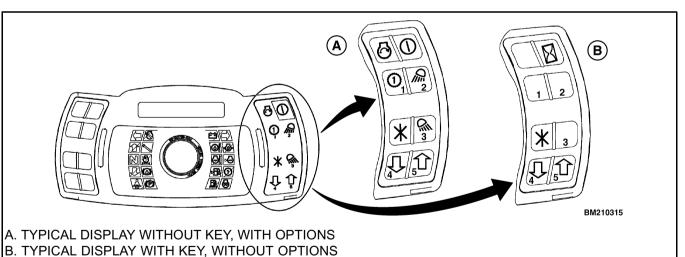


Table 16. Proc_Cal_014: Load Weight Zero Point

Proc_Cal_001: Service Password Entry before proceeding.

Action 1: Start Engine.

Table 16. Proc_Cal_014: Load Weight Zero Point (Continued)

Action 2: Position Mast Vertical. You Will See: **Action 3:** With No Load, Activate Lift Control to Raise Main Menu **Passwords** Forks/Attachment Approximately 0.6 m (2 ft), But If Freelift Is Present, Not More Than Maximum Freelift. (B) BM210316 E-HYD CONTROL LEVERS LIFT/LOWER TILT **3**. *AUX 1 OR AUX 2 *AUX 2 OR AUX 3 *FOURTH LEVER DIRECTION LIFT ↓ DIRECTION BACK ↓ DIRECTION A ↑ DIRECTION A ↑ *THIRD LEVER DIRECTION LOWER ↑ DIRECTION FWD ↑ DIRECTION B ↓ DIRECTION B ↓ SEAT ARMREST *AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 5 FUNCTION VALVE WITH CLAMPING ATTACHMENT, AUX 2 IS IN THE THIRD LEVER LOCATION. **JOYSTICK** TILT BACK 2. AUX 1 **5**. AUX 2 TILT FORWARD 3. LIFT \downarrow DIRECTION A ↑ DIRECTION A ↑ SEAT ARMREST 4. ↑ LOWER DIRECTION B ↓ DIRECTION B ↓ Until You See: Main Menu Step 1: Press 🛈 or 🗸 Calibrations Step 2: Press * One Time You Will See: Calibrations Lift Valve Output Step 3: Press 🛈 or 🗸 **Until You See:** Calibrations Load Weight Set Zero Step 4: Press * One Time Load Weight Set Zero You Will See: Press * with No Load Action 4: Lower The Empty Forks/Attachment Approximately 51 mm (2 in.), Wait One Second And Immediately Press * One Time.

Perform Proc_Cal_003: Save and Exit if not performing additional calibration procedures.

Proc Cal 015: Loaded Weight Calibration

WHEN TO PERFORM

1. Perform when the pressure transducer is replaced.

OR

2. Perform the calibration when the following procedure does not pass.

Lift a load equal to approximately 3/4 the lift truck capacity or more and raise the load in the same manner as when performing the Proc_Cal_014: Load Weight Zero Point several times to ensure the system repeats within approximately ±2 percent of truck capacity. If it does not, then remove the load and recheck the Proc_Cal_014: Load Weight Zero Point. If the load weights are then within tolerance, continue using the system. If not within tolerance, then proceed to perform the Loaded Weight Calibration.

CALIBRATION ORDER

Action 1: Start Engine.

- 1. Proc_Cal_001
- **2.** Proc Cal 015

WHY PERFORM

Because known load weights are not weighing within ±2 percent of truck capacity.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 17 for the procedures on how to perform Proc_Cal_015: Loaded Weight Calibration.



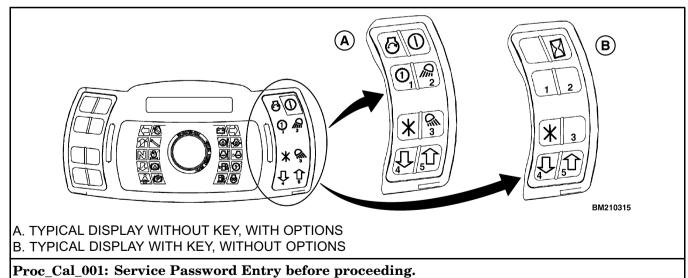


Table 17. Proc_Cal_015: Loaded Weight Calibration (Continued)

Action 2: Position Mast Vertical.		
Action 3: With No Load, Activate Lift Control to Raise Forks/Attachment Approximately 0.6 m (2 ft), But If Freelift Is Present, Not More Than Maximum Freelift.	You Will See:	Main Menu Passwords
A 1 2 3 4 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	3	5 6
A. E-HYD CONTROL LEVERS		BM210316
1. LIFT/LOWER 2. TILT 3. *AUX 1 OR AUX DIRECTION LIFT ↓ DIRECTION BACK ↓ DIRECTION A ↑ DIRECTION LOWER ↑ DIRECTION FWD ↑ DIRECTION B ↓	DIRECTION A	A ↑ 6. *THIRD LEVER
*AUX 2 IS IN THE FOURTH LEVER LOCATION EXCEPT AS FOLLOWS: WITH 2 IS IN THE THIRD LEVER LOCATION.	5 FUNCTION VALVE WIT	TH CLAMPING ATTACHMENT, AUX
B. JOYSTICK		
1. TILT BACK 2. AUX 1 3. LIFT ↓ DIRECTION A ↑ 4. ↑ LOWER DIRECTION B ↓	5. AUX 2 DIRECTION I DIRECTION I	
Step 1: Press û or ↓	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press 🛈 or 🗸	Until You See:	Calibrations Load Weight Calibration
Step 4: Press * One Time	You Will See:	Load Weight Set Zero Press * with No Load
Action 4: Lower The Empty Forks/Attachment Approximately 51 mm (2 in.), Wait One Second And Immediately Press * One Time.	You Will See:	Lift Known Load To Weighing Height

Press * One Time.

Table 17. Proc_Cal_015: Loaded Weight Calibration (Continued)

Action 5: Safely Raise A Load Of Known Weight Equal To 3/4 Or More Of Rated Lift Truck Capacity. Lift To A Height Of Approximately 0.6 m (2 ft), But If Freelift Is Present, Not More Than Maximum Freelift. Ensure Mast Is Vertical. You Will See: Scroll to Correct Weight Step 6: Press * One Time with #### lbs. Step 7: Press 🛈 or 🕄 **Until You See:** Weight On Display Equal To Weight On Forks/Attachment. Action 6: Lower Known Weight Load. Action 7: Safely Raise A Load Of Known Weight To A Height Of Approximately 0.6 m (2 ft), But If Freelift Is Present, Not More Than Maximum Freelift. Action 8: Lower Known Weight Load Approximately 51 mm (2 in.), Wait One Second, Read The Load Weight. **Until You See:** The Weight Displayed One Step 8: Press 1 or J Second After Stopping Is Within 2% Of Weight On Forks. Action 9: Repeat Action 6 Through 8 Until 2% Noted In Step 8 Is Achieved. The load may have to be raised several times and it may take several presses of the scroll \widehat{U} and $\overline{\mathbb{Q}}$ buttons before the correct weight is displayed. Action 10: Lower Known Weight Load. Action 11: Safely Raise A Load Of Known Weight To A Height Of Approximately 0.6 m (2 ft), But If Freelift Is Present, Not More Than Maximum Freelift. Action 12: Lower Known Weight Load Approximately 51 mm (2 in.), Wait One Second And Immediately

Perform Proc Cal 003: Save and Exit if not performing additional calibration procedures.

Proc_Cal_016: Transmission Valve Calibration

NOTE: The information contained in the transmission calibration procedures described below, apply to all lift trucks covered in this SRM except lift truck models S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006). Calibration procedures for S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006) can be found in Table 19.

APPLICABLE SYSTEM/OPTION

Electronic Power Shift Transmission

WHEN TO PERFORM

Performed whenever disassembling or replacing the transmission, the transmission valve, or the transmission pressure sensors.

CALIBRATION ORDER

1. Proc_Cal_001

NOTE: Brakes must be properly adjusted and functioning prior to performing this procedure.

2. Proc_Cal_016

WHY PERFORM

Performed to compensate for clutch pack control valve pressure in relation to valve command current tolerances.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

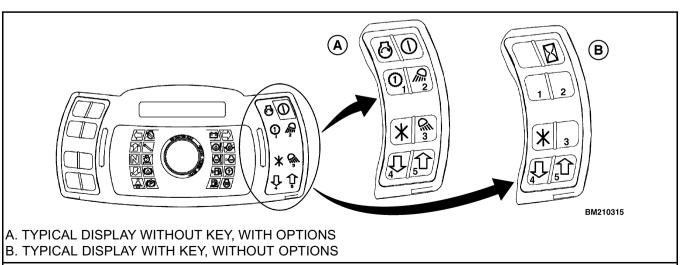


WARNING

Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring.

Refer to Table 18 for the procedures on how to perform Proc_Cal_016: Transmission Valve Calibration.

Table 18. Proc Cal 016: Transmission Valve Calibration



Information: Parking Brake and Service Brakes MUST be properly adjusted and functioning before performing this procedure.

Table 18. Proc_Cal_016: Transmission Valve Calibration (Continued)

Perform Proc_Cal_001: Service Password Entry before proc_Cal_001	roceeding.	
Action: Start Engine.	You Will See:	Main Menu Passwords
Step 1: Press 🛈 or 🗸	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press T or J	Until You See:	Calibrations Calibrate Xsmn Valve
Step 4: Press * One Time	You Will See:	Calibrate Xsmn Valve Press * to Begin
Action 1: APPLY Parking Brake and leave on throughout proce	ess.	
Action 2: FULLY APPLY Service Brakes and HOLD during pro	ocess.	
Action 3: FULLY Depress Accelerator Pedal and HOLD during	process.	
Action 4: Allow for the transmission to warm up to 46° C (115° H	7).	
Information: This is an automated process. The Engine, Park for the process to start.	Brake, and Service	Brake must all be ON
If either Parking or Service Brake is NOT applied, you will see	Apply Parking Bra Apply Service Bra	
If both Parking and Service Brakes are applied, you will see	Calibrate Xmsn Valve Press * to Begin.	
NOTE: Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring. Press * One Time		Calibrate Xmsn Valve Done in 15
Watch display countdown. When completed successfully	You Will See:	Calibrations Calibrate Xmsn Valve
Perform Proc_Cal_003: Save and Exit.	•	•

NOTE: The information contained in the transmission calibration procedures described below, apply to lift truck models S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006).

APPLICABLE SYSTEM/OPTION

Electronic Power Shift Transmission.

WHEN TO PERFORM

Performed whenever disassembling or replacing the transmission, the transmission valve, or the transmission pressure sensors.

CALIBRATION ORDER

1. Proc_Cal_001

NOTE: Brakes must be properly adjusted and functioning prior to performing this procedure.

2. Proc_Cal_016

WHY PERFORM

Performed to compensate for clutch pack control valve pressure in relation to valve command current tolerances.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

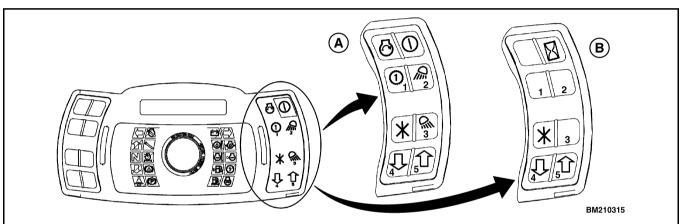


WARNING

Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring.

Refer to Table 19 for the procedures on how to perform Proc Cal 016: Transmission Valve Calibration.

Table 19. Proc Cal 016: Transmission Valve Calibration (S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006))



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Information: Parking Brake and Service Brakes MUST be properly adjusted and functioning before performing this procedure.

Perform Proc Cal (001: Service Pa	assword Entry	before	proceeding.
--------------------	-----------------	---------------	--------	-------------

Action: Start Engine.	You Will See:	Main Menu Passwords
Step 1: Press	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press ↑ or ↓	Until You See:	Calibrations Calibrate Xsmn Valve
Step 4: Press * One Time	You Will See:	Calibrate Xsmn Valve Press * to Begin

Action 1: APPLY Parking Brake and leave on throughout process.

Action 2: FULLY APPLY Service Brakes and HOLD during process.

Action 3: FULLY Depress Accelerator Pedal and HOLD during heating mode.

Table 19. Proc_Cal_016: Transmission Valve Calibration (S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006)) (Continued)

Action 4: Allow for the transmission to warm up to 60°C (140°F) (automatic operation).

Information: This is an automated process. The Engine, Park Brake, and Service Brake must all be ON for the process to start. The calibration process will begin automatically after the transmission has fully warmed up. The accelerator pedal can then be released. The operator must be in the seat during the duration of the calibration process which takes approximately 25 minutes (5 minutes per clutch pack).

If transmission temperature drops below 40°C (104°F) calibration will stop and heating mode will start up again. Press and hold the accelerator pedal down until transmission temperature reaches 60°C (140°F). The calibration process will then continue from where it left off.

If a fault occurs during the calibration process, press the * button once to continue the calibration process. Recover and troubleshoot all faults after the calibration process has been completed.

If either Parking or Service Brake is NOT applied, you will see	Apply Parking Brake Apply Service Brake	
If both Parking and Service Brakes are applied, you will see	Calibrate Xmsn Valve Press * to Begin.	
NOTE: Keep park brake applied and full service brake applied during entire time that automated transmission valve calibration is occurring. Calibration starts automatically after heating mode.		Xmsn Calibration X (X Represents the Clutch Pack Being Calibrated)
When calibration is completed successfully	You Will See:	Calibrations Calibrate Xmsn Valve
Perform Proc Cal 003: Save and Exit.	<u> </u>	Canbrate Amsir varv

Proc Cal 016A: Transmission Valve Calibration-Electronic **Extended Funtion**

NOTE: The information contained in the transmission calibration procedures described below, apply to all lift trucks covered in this SRM except lift truck models S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006).

APPLICABLE SYSTEM/OPTION

Electronic Power Shift Transmission

WHEN TO PERFORM

Performed whenever disassembling or replacing the transmission, the transmission valve, or the transmission pressure sensors.

CALIBRATION ORDER

1. Proc_Cal_001

NOTE: Brakes must be properly adjusted and functioning prior to performing this procedure.

2. Proc_Cal_016A

WHY PERFORM

Performed to compensate for clutch pack control valve pressure in relation to valve command current tolerances.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

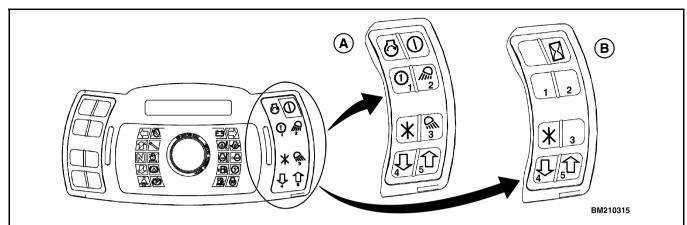


WARNING

Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring.

Refer to Table 20 for the procedures on how to perform Proc Cal 016: Transmission Valve Calibration.

Table 20. Proc Cal 016A: Transmission Valve Calibration



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Information: Parking Brake and Service Brakes MUST be properly adjusted and functioning before performing this procedure.

Perform Proc_Cal_001: Service Password Entry before proceeding.

Action: Start Engine.	You Will See:	Main Menu Passwords
Step 1: Press û or ↓	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press ↑ or ↓	Until You See:	Calibrations Calibrate Xsmn Valve
Step 4: Press * One Time	You Will See:	Calibrate Xsmn Valve Press * to Begin

Action 1: APPLY Parking Brake and leave on throughout process.

Action 2: FULLY APPLY Service Brakes and HOLD during process.

Action 3: FULLY Depress Accelerator Pedal and HOLD during process.

Action 4: Allow for the transmission to warm up to 46°C (115°F).

Information: This is an automated process. The Engine, Park Brake, and Service Brake must all be ON for the process to start.

If either Parking or Service Brake is NOT applied, you will see	Apply Parking Brake Apply Service Brake	
If both Parking and Service Brakes are applied, you will see	Calibrate Xmsn Valve Press * to Begin.	
NOTE: Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring. If you release the service brake at any time during L2 calibration, the calibration will start over from the beginning. Press * One Time		Calibrate Xmsn Valve Done in 35

Watch display countdown. When completed successfully The engine will go to idle and you will see for approximately 2 minutes:	You Will See:	Calibrate Xmsn Valve Xmsn Calibration 0			
Watch display. When completed successfully You will see for approximately 2 minutes:	You Will See:	Calibrate Xmsn Valve Xmsn Calibration 1			
Watch display. When completed successfully You will see for approximately 2 minutes:	You Will See:	Calibrate Xmsn Valve Xmsn Calibration 2			
Watch display. When completed successfully	You Will See:	Calibrations Calibrate Xmsn Valve			
Perform Proc_Cal_003: Save and Exit.					

Table 20. Proc_Cal_016A: Transmission Valve Calibration (Continued)

Proc Cal 016B: Trans. Valve Calibration-Electronic and **Electronic Extended Function**

NOTE: The information contained in the transmission calibration procedures described below, apply to the following lift truck modelscovered in this SRM S6.0FT, S7.0FT (S135FT,S155FT) (D024, E024) and H6.0FT, H7.0FT (H135FT, H155FT) (H006, J006).

APPLICABLE SYSTEM/OPTION

Electronic Power Shift Transmission

WHEN TO PERFORM

Performed whenever disassembling or replacing the transmission, the transmission valve, or the transmission pressure sensors.

CALIBRATION ORDER

1. Proc Cal 001

NOTE: Brakes must be properly adjusted and functioning prior to performing this procedure.

2. Proc_Cal_016B

WHY PERFORM

Performed to compensate for clutch pack control valve pressure in relation to valve command current tolerances.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

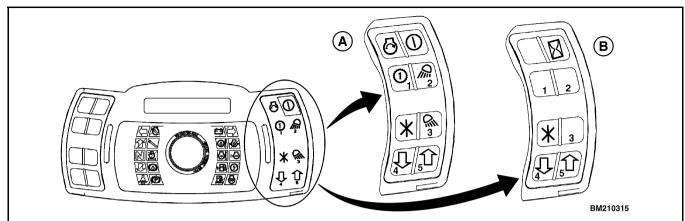


WARNING

Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring.

Refer to Table 21 for the procedures on how to perform Proc Cal 016: Transmission Valve Calibration.

Table 21. Proc_Cal_016B: Transmission Valve Calibration



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Information: Parking Brake and Service Brakes MUST be properly adjusted and functioning before performing this procedure.

I	Perform	Proc	Cal	001:	Service	Password	Entry	before	proceeding.

Action: Start Engine.	You Will See:	Main Menu Passwords
Step 1: Press ↑ or ↓	Until You See:	Main Menu Calibrations
Step 2: Press * One Time	You Will See:	Calibrations Lift Valve Output
Step 3: Press ↑ or ↓	Until You See:	Calibrations Calibrate Xsmn Valve
Step 4: Press * One Time	You Will See:	Calibrate Xsmn Valve Press * to Begin

Action 1: APPLY Parking Brake and leave on throughout process.

Action 2: FULLY APPLY Service Brakes and HOLD during process.

Action 3: FULLY Depress Accelerator Pedal and HOLD during process.

Action 4: Allow for the transmission to warm up to 46°C (115°F).

Information: This is an automated process. The Engine, Park Brake, and Service Brake must all be ON for the process to start.

If either Parking or Service Brake is NOT applied, you will see	Apply Parking Brake Apply Service Brake		
	Calibrate Xmsn Valve Press * to Begin.		
NOTE: Keep park brake applied, full service brake applied, and full accelerator applied during entire time that automated transmission valve calibration is occurring. If you release the service brake at any time during L2 calibration, the calibration will start over from the beginning. Press * One Time		Xmsn Oil Temp xxx°	

You Will See: Calibrate Xmsn Valve Watch display countdown. When completed Xmsn Calibration 0 successfully..... The engine will go to idle and you will see for approximately 2 minutes: Calibrate Xmsn Valve Watch display. When completed successfully..... You will You Will See: see for approximately 2 minutes: Xmsn Calibration 1 Watch display. When completed successfully..... You will You Will See: Calibrate Xmsn Valve Xmsn Calibration 2 see for approximately 2 minutes: You Will See: Watch display. When completed successfully..... You will Calibrate Xmsn Valve Xmsn Calibration 3 see for approximately 2 minutes: Watch display. When completed successfully..... You will You Will See: Calibrate Xmsn Valve Xmsn Calibration 4 see for approximately 2 minutes: You Will See: Watch display. When completed successfully..... Calibrations Calibrate Xmsn Valve Perform Proc Cal 003: Save and Exit.

Table 21. Proc_Cal_016B: Transmission Valve Calibration (Continued)

Proc Cal 019: Mazda LP and Gas Accelerator Pedal Adjustment

REQUIRED TOOLS

LPG:

• 13mm Open-End Wrench

Gas:

- #3 Phillips Head Screwdriver
- 10mm Open-End Wrench
- 13mm Open-End Wrench

WHEN TO PERFORM

Perform when adjusting or first installing an accelerator pedal assembly on fork trucks equipped with the Mazda LP and Mazda gas engines and electronic control transmission.

CALIBRATION ORDER

- 1. Proc_Cal_001
- **2.** Proc Cal 019

WHY PERFORM

Sets the lost motion in the throttle assembly for the proper operation of the clutch pack braking and inching functions.

HOW TO PERFORM



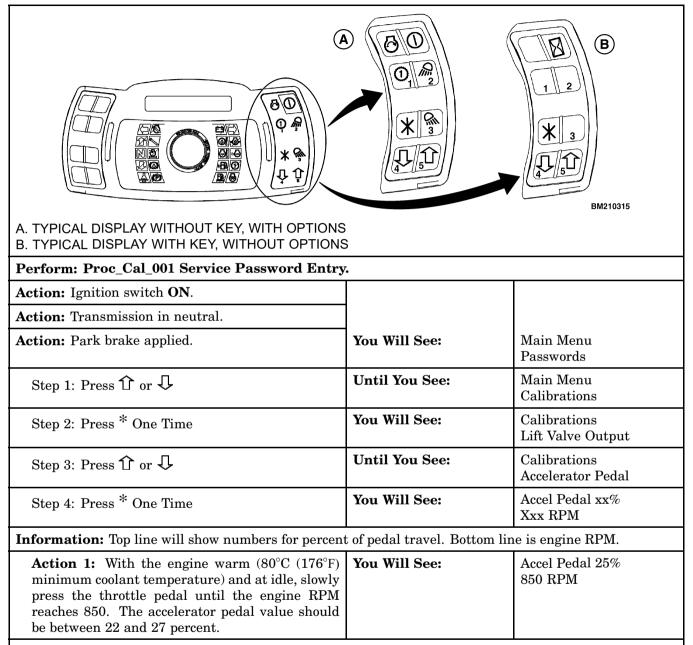
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 22 for the procedures on how to perform Proc_Cal_019: Mazda LP and Gas Accelerator Pedal Adjustment.

Table 22. Proc Cal 019: Mazda LP and Gas Accelerator Pedal Adjustment



Action 2 (**LPG**): If this value is below 22 percent, then adjust slack into the cable by adjusting the nuts on the engine throttle cable bracket. If the value is above 27 percent, remove the slack in the cable by adjusting the same nuts. If there is not enough adjustment, verify that the bell crank to cowl clearance is correct. When adjustment is complete, tighten throttle cable adjusting screws to 8 to 15 N•m (6 to 11 lbf ft). Refer to the **Frame** section for your lift truck for complete adjustment procedures.

Action 2 (Gas): If this value is below 22 percent, increase the clearance between the bellcrank screw and the bellcrank follower by adjusting the bellcrank screw. If the value is above 27 percent, decrease the clearance between the bellcrank screw and the bellcrank follower by adjusting the bellcrank screw. When adjustment is complete, lock the adjusting screw with the jam nut. Refer to the **Frame** section for your lift truck for complete adjustment procedures.

Table 22. Proc_Cal_019: Mazda LP and Gas Accelerator Pedal Adjustment (Continued)

Action 3: Adjust bumper on the underside of the throttle pedal and tighten jam nut as shown in the Frame section for your lift truck.

Action: Ignition OFF.

Proc Cal 025: Hydraulic Valve Pressure Gage Installation

WHEN TO PERFORM

Perform whenever any hydraulic calibration items are performed by using the pressure method.

WHY PERFORM

Installation of a pressure gage will allow for the pressure method to be used whenever any hydraulic calibration items are performed.

HOW TO PERFORM



WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 23 for the procedures on how to perform Proc_Cal_025: Hydraulic Valve Pressure Gage Installation.

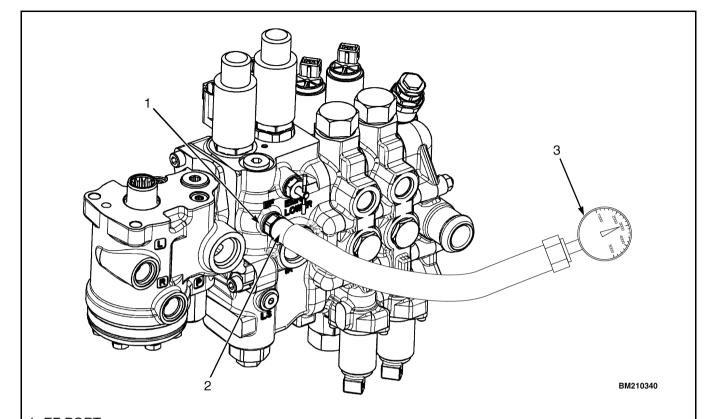


Table 23. Proc_Cal_025: Hydraulic Valve Pressure Gage Installation

- 1. EF PORT
- 2. DIAGNOSTIC FITTING
- 3. PRESSURE GAGE

Information: "Creep" is defined as the threshold when a function first starts to move very slowly (barely perceptible motion). The identification of this motion is defined as the "visual method." The method that provides more consistent calibration is by monitoring the change in pressure when the function is activated; this is defined as the "pressure method."

Action: With the ignition turned **OFF**, install a 24 MPa (3500 psi) minimum analog pressure gage in the EF Port. (See illustration above.) It is highly recommended to use a small diameter hose (approximately 2 to 3 mm ID) to minimize pressure variation seen at the gage.

Information: It is recommended that the diagnostic fitting installed in the EF Port is used. This fitting is a Parker EMA3/3/7/16-20UNF-2A or HYDAC 06003735. A gage can be connected to this fitting by using a flexible hose (Parker SMA3-200, SMA3-400, SMA3-800, SMA3-2000, SMA3-4000, or equivalent). The alternative is to remove the diagnostic fitting and connect directly to the EF Port; port size: SAE #4 O-ring Port (7/16-20UNF). If this is done, ensure that the fitting is tightened to the torque specified per HC-712, and that the connection is leak-free after the calibrations are completed and the gage is removed. Preceding procedure is the same for lift trucks equipped with OPS solenoids.

Proc Cal 026: Travel Speed Calibration

WHEN TO PERFORM

For trucks with electronic or enhanced electronic transmissions that perform advanced functions, perform the calibration process whenever changing the drive tire size or if the truck travel speed diagnostic display is not reading correctly.

CALIBRATION ORDER

No prior calibration required.

WHY PERFORM

Advanced function transmission control decisions are based on travel speed. The VSM needs accurate travel speed information for advanced functions such as enhanced power reversals, auto-decel, and travel speed limiting, to work correctly.

HOW TO PERFORM



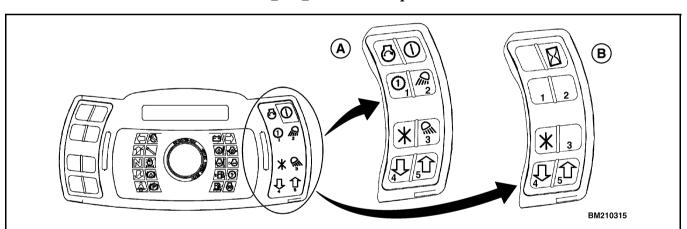
WARNING

Keep yourself and all others clear of the lift mechanism. Never allow anyone under or on the forks.

Never put hands, arms, head, or legs through the mast or near the carriage or lift chains. This warning applies not only to the operator but also the helper. A helper must not be near the load or the lift mechanism while the operator is attempting to handle a load. The lift mechanism has moving parts with close clearances that can cause serious injury.

Refer to Table 24 for the procedures on how to perform Proc Cal 026: Travel Speed Calibration.

Table 24. Proc Cal 026: Travel Speed Calibration



A. TYPICAL DISPLAY WITHOUT KEY, WITH OPTIONS B. TYPICAL DISPLAY WITH KEY, WITHOUT OPTIONS

Action 1: Make two marks 15 m (50 ft) apart on level ground.

Action 2: Drive truck up to the first mark. Be sure to choose a reference point on the truck to line up with the mark on the ground. Also be sure that the steer tires are aligned straight ahead.

Action 3: Shut the engine **OFF** and enter the service password in the dash.

Action 4: Start the engine.

Action 5: Scroll to the Calibrations Menu and press *.

Action 6: Scroll to the Travel Speed Sensor and press *.

Action 7: Press * when ready to begin.

Table 24. Proc_Cal_026: Travel Speed Calibration (Continued)

Action 8: Drive to the second mark (15 m (50 ft), stopping when the reference point you made lines up with the 15 m (50 ft) mark. Be sure to drive straight as possible. Travel speed will not have any affect on the outcome of the calibration.

Action 9: Press *.

Action 10: The display should say "Save and Exit" if the calibration process was performed properly.

Action 11: Press * twice to save the calibration.

Verification: Access the speed indicator by using the \widehat{U} or \overline{U} , or by performing **Action 12** through **Action 15**.

Action 12: Press *.

Action 13: Scroll to the Diagnostics Menu and press *.

Action 14: Scroll to the XMSN/Brake Data Disp Menu and press *.

Action 15: Scroll to Travel Speed Sensor Menu and press *.

Drive the truck at top speed and verify that the top speed agrees with the model truck within ± 1.61 km/h (± 1 mph).

NOTE: The travel speed diagnostic display in 1.61 km/h (1 mph) increments. Any speed between whole numbers is always rounded down to the nearest whole number.

NOTES

