

2007 Mazda MX-5 Miata Sport

2007 ACCESSORIES & BODY, CAB Symptom Troubleshooting (Power Retractable Hardtop) - MX-5 Miata

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Symptom Troubleshooting (Power Retractable Hardtop) - MX-5 Miata

SYMPTOM TROUBLESHOOTING INDEX[POWER RETRACTABLE HARDTOP]

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No.	TROUBLESHOOTING ITEM	DESCRIPTION
1	Power retractable hardtop warning buzzer sounds continuously	Power retractable hardtop warning buzzer sounds continuously while vehicle is stopped
2	Power retractable hardtop indicator light flashing	Power retractable hardtop indicator light flashes when power retractable hardtop is stopped
3	Power retractable hardtop does not start to open	Power retractable hardtop does not start to open when power retractable hardtop (open) switch is pressed
4	Power retractable hardtop does not start to close	Power retractable hardtop does not start to close when power retractable hardtop (close) switch is pressed
5	Power retractable hardtop stops while operating	Power retractable hardtop stops while power retractable hardtop is opening/closing

NO. 1 POWER RETRACTABLE HARDTOP WARNING BUZZER SOUNDS CONTINUOUSLY[POWER RETRACTABLE HARDTOP]

POWER RETRACTABLE HARDTOP WARNING BUZZER SOUNDS CONTINUOUSLY[POWER RETRACTABLE HARDTOP] POSSIBLE CAUSES

1	Power retractable hardtop warning buzzer sounds continuously
DESCRIPTION	<ul style="list-style-type: none">• Power retractable hardtop warning buzzer sounding continuously while the vehicle is stopped.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Power retractable hardtop control module sends an buzzer operation signal to the instrument cluster.<ul style="list-style-type: none">○ Power retractable hardtop control module malfunction○ Power retractable hardtop control module cannot detect the power retractable hardtop permission condition signal.<ul style="list-style-type: none">• Vehicle speed detected• Transmission position detected (except for transmission neutral (MT)/N or P position (AT) detected)• Power retractable hardtop control module detects a system malfunction• Instrument cluster malfunction (Buzzer sounds regardless of the

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instruction from the power retractable hardtop control module)

DIAGNOSTIC PROCEDURE

- When performing the asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to determine whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

POWER RETRACTABLE HARDTOP WARNING BUZZER SOUNDS CONTINUOUSLY[POWER RETRACTABLE HARDTOP] DIAGNOSTIC PROCEDURE

STEP	INSPECTION		ACTION
1	VERIFY THAT PRESENT DTC IS STORED <ul style="list-style-type: none"> Stop the vehicle. Shift to P or N position (AT)/neutral position (MT). Turn the ignition switch to the ON position. Verify that power retractable hardtop indicator light status. Is the power retractable hardtop indicator light flashing? 	Yes	Retrieve the DTC for the power retractable hardtop control module using the M-MDS. If the DTC is displayed, perform the appropriate troubleshooting procedure. Then go to the next step.
		No	Go to the next step.
2	VERIFY THAT POWER RETRACTABLE HARDTOP INDICATOR LIGHT ILLUMINATES <ul style="list-style-type: none"> Turn the ignition switch to ON position. Verify the power retractable hardtop indicator light status. Does the power retractable hardtop indicator light illuminate? 	Yes	Fully open/close the roof and lock the top lock (if the roof is fully closed). Verify the power retractable hardtop indicator light status again. If the indicator light illuminates with the power retractable hardtop fully open, return to step 1. If the indicator light illuminates with the power retractable hardtop fully closed, inspect the top lock switch. If the indicator light does not illuminate go to the next step.
		No	Go to the next step.
3	INSPECT TO SEE WHETHER MALFUNCTION IS IN OPERATION PERMISSION CONDITION SIGNAL OR ELSEWHERE <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. 	Yes	Go to the next step.

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	<ul style="list-style-type: none"> • Monitor the following PIDs. <p>(See PCM INSPECTION [LF] .)</p> <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL] .)</p> <p>(See POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION .)</p> <p>PCM</p> <ul style="list-style-type: none"> ○ VSS ○ PNP/CP (MT) ○ CPP (MT) <p>TCM (AT)</p> <ul style="list-style-type: none"> ○ TR <p>Power Retractable Hardtop Control Module</p> <ul style="list-style-type: none"> ○ VSS <ul style="list-style-type: none"> • Are these monitor values normal? 	No	Inspect and repair the suspected signal related wiring harness and component.
4*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN INSTRUMENT CLUSTER (BUZZER) OR POWER RETRACTABLE HARDTOP CONTROL MODULE</p> <ul style="list-style-type: none"> • Perform the "INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE". (See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE .) • Does the buzzer sound with check code 14? 	Yes	Replace the power retractable hardtop control module. (See POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION .)
		No	Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION .) (See INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY .)

NO. 2 POWER RETRACTABLE HARDTOP INDICATOR LIGHT FLASHING [POWER RETRACTABLE HARDTOP]

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POWER RETRACTABLE HARDTOP INDICATOR LIGHT FLASHING[POWER RETRACTABLE HARDTOP] POSSIBLE CAUSES

2	Power retractable hardtop indicator light flashing
DESCRIPTION	<ul style="list-style-type: none"> • Power retractable hardtop indicator light flashes when the power retractable hardtop is stopped.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Locking of the top lock is unstable when it is fully closed. (Locks and unlocks repeatedly) <ul style="list-style-type: none"> ○ Top lock switch malfunction ○ Open or short circuit in the wiring harness between the top lock switch and the power retractable hardtop control module • Power retractable hardtop control module cannot control the power retractable hardtop indicator light operation. <ul style="list-style-type: none"> ○ Power retractable hardtop control module malfunction ○ Short to ground in the wiring harness between power retractable hardtop control module and the power retractable hardtop indicator light. • Power retractable hardtop control module detects a system malfunction.

DIAGNOSTIC PROCEDURE

- When performing the asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to determine whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and the wiring harness are connected correctly and undamaged.

POWER RETRACTABLE HARDTOP INDICATOR LIGHT FLASHING[POWER RETRACTABLE HARDTOP] DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION	
1	VERIFY THAT PRESENT DTC IS STORED <ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Retrieve the DTC for the power retractable hardtop control module • Is there a DTC present? 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE[POWER RETRACTABLE HARDTOP] .)
		No	Go to the next step.
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN TOP LOCK SWITCH OR ELSEWHERE <ul style="list-style-type: none"> • Verify the power retractable hardtop status. • Is the power retractable hardtop 	Yes	Go to the next step.
		No	Go to step 4.

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	fully closed?		
3	INSPECT TOP LOCK SWITCH <ul style="list-style-type: none"> • Inspect the top lock switch. (See <u>TOP LOCK SWITCH INSPECTION[ADVANCED KEYLESS SYSTEM]</u> .) • Is the top lock switch normal? 	Yes	Inspect and repair for an open or short circuit in the wiring harness between the top lock switch and power retractable hardtop control module.
		No	Replace the striker switch. (See <u>CONVERTIBLE TOP REMOVAL/INSTALLATION</u> .)
4*	INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP INDICATOR LIGHT CONTROL CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (6-pin) and power retractable hardtop switch connectors. • Verify the continuity between the power retractable hardtop control module terminal 2C and ground. • Is there continuity? 	Yes	Replace for a short to the ground circuit.
		No	Go to the next step.
5	INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP INDICATOR LIGHT OR POWER RETRACTABLE HARDTOP CONTROL MODULE <ul style="list-style-type: none"> • Reinspect malfunction condition. Does the power retractable hardtop indicator light flash? 	Yes	Replace the power retractable hardtop control module. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION</u> .)
		No	Replace the power retractable hardtop switch. (See <u>POWER RETRACTABLE HARDTOP SWITCH REMOVAL/INSTALLATION</u> .)

NO. 3 POWER RETRACTABLE HARDTOP DOES NOT START TO OPEN [POWER RETRACTABLE HARDTOP]

POWER RETRACTABLE HARDTOP DOES NOT START TO OPEN[POWER RETRACTABLE HARDTOP] POSSIBLE CAUSES

3	Power retractable hardtop does not to start open
DESCRIPTION	<ul style="list-style-type: none"> • Power retractable hardtop does not start to open when the power retractable hardtop (open) switch is pressed • Power retractable hardtop control module cannot detect the power

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POSSIBLE CAUSE

- retractable hardtop permission condition signal.
 - Improper vehicle speed detected
 - Improper transmission position detected (except for transmission neutral (MT)/N or P position (AT) detected)
- Power retractable hardtop control module cannot detect the proper power retractable hardtop switch signal.
 - Power retractable hardtop (open) switch malfunction (stuck off)
 - Power retractable hardtop (close) switch malfunction (stuck on)
 - Open or short circuit in the wiring harness between the power retractable hardtop control module and the power retractable hardtop switch.
- Release of the top lock cannot be determined by the Power retractable hardtop control module.
 - Top lock switch malfunction
 - Open or short circuit in the wiring harness between the top lock switch and the power retractable hardtop control module
- Power retractable hardtop control module cannot detect proper deck panel and roof positions
 - Deck panel open position switch signal improper
 - Deck panel open position switch malfunction
 - Deck panel open position switch improper installation
 - Open or short circuit in the wiring harness
 - Deck panel close position switch signal malfunction
 - Deck panel close position switch malfunction
 - Deck panel close position switch improper installation
 - Open or short circuit in the wiring harness
 - Power retractable hardtop open position switch signal malfunction
 - Power retractable hardtop open position switch malfunction
 - Power retractable hardtop open position switch improper installation
 - Open or short circuit in the wiring harness
 - Power retractable hardtop close position switch signal malfunction
 - Power retractable hardtop close position switch malfunction
 - Power retractable hardtop close position switch improper installation
 - Open or short circuit in the wiring harness
- Power retractable hardtop link mechanics malfunction
 - Excessive restriction or hesitation
- Power retractable hardtop control module detects a system malfunction

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NOTE:

- If the following conditions are recognized, the power retractable hardtop control module invalidates the operation of the power retractable hardtop (open) switch.
 - Top lock is locked with the power retractable hardtop fully closed
 - Power retractable hardtop the fully open

DIAGNOSTIC PROCEDURE

- When performing the asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to determine whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and the wiring harness are connected correctly and undamaged.

POWER RETRACTABLE HARDTOP DOES NOT START TO OPEN[POWER RETRACTABLE HARDTOP] DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION
1	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN OPERATION PERMISSION CONDITION SIGNAL OR ELSEWHERE</p> <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Monitor the following PIDs. <p>(See PCM INSPECTION [LF] .)</p> <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL] .)</p> <p>(See POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION .)</p> <p>PCM</p> <ul style="list-style-type: none"> ○ VSS ○ PNP/CP (MT) ○ CPP (MT) <p>TCM (AT)</p>	<p>Yes</p> <p>Go to the next step.</p>
		<p>No</p> <p>Inspect and repair the suspected signal related wiring harness and component.</p>

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	<ul style="list-style-type: none"> ○ TR <p style="text-align: center;">Power Retractable Hardtop Control Module</p> <ul style="list-style-type: none"> ○ VSS ● Are these monitor values normal? 		
2*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP (CLOSE) SWITCH SIGNAL OR ELSEWHERE</p> <ul style="list-style-type: none"> ● Monitor the power retractable hardtop control module PID SW_CL (power retractable hardtop (close) switch) using the M-MDS without the power retractable hardtop (close) switch pressed. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION</u> .) ● Is the monitor value OFF? 	Yes	Go to step 4.
		No	Go to the next step.
3	<p>INSPECT POWER RETRACTABLE HARDTOP (CLOSE) SWITCH</p> <ul style="list-style-type: none"> ● Turn the ignition switch to the LOCK position. ● Remove the power retractable hardtop switch. ● Measure the resistance between power retractable hardtop switch component side connector terminals A and F without the power retractable hardtop (close) switch pressed. ● Is the resistance 2.18-2.22 kohms? 	Yes	Replace the power retractable hardtop switch. (See <u>POWER RETRACTABLE HARDTOP SWITCH REMOVAL/INSTALLATION</u> .)
		No	Inspect and repair the wiring harness between power retractable hardtop control module terminal 1H and power retractable hardtop switch terminal F at wiring harness side connectors.
4	<p>VERIFY THAT POWER RETRACTABLE HARDTOP INDICATOR LIGHT ILLUMINATION</p> <ul style="list-style-type: none"> ● Turn the ignition switch to the ON 	Yes	<p>If the indicator light is flashing: Go to the next step.</p> <p>If the indicator light is illuminated: Go to step 6.</p>

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	<p>position.</p> <ul style="list-style-type: none"> • Verify the power retractable hardtop indicator light status. • Does the power retractable hardtop indicator light flash or illuminate? 	No	Go to step 9.
5	<p>VERIFY THAT PRESENT MALFUNCTION DTC IS STORED</p> <ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Retrieve the DTC for the power retractable hardtop control module. (See <u>DTC INSPECTION[POWER RETRACTABLE HARDTOP]</u> .) • Is there any present malfunction DTC? 	Yes	Go to the appropriate DTC inspection. (See <u>DTC TABLE[POWER RETRACTABLE HARDTOP]</u> .)
		No	Go to <u>NO. 2 POWER RETRACTABLE HARDTOP INDICATOR LIGHT FLASHING[POWER RETRACTABLE HARDTOP]</u> .
6*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN TOP LOCK SWITCH OR ELSEWHERE</p> <ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Monitor the power retractable hardtop control module PID SW_STRIKER using the M-MDS while the top lock switch is released. (See <u>DTC INSPECTION[POWER RETRACTABLE HARDTOP]</u> .) • Is the monitor value OFF? 	Yes	Go to step 8.
		No	Go to the next step.
7	<p>INSPECT TOP LOCK SWITCH</p> <ul style="list-style-type: none"> • Inspect the top lock switch. (See <u>TOP LOCK SWITCH INSPECTION[ADVANCED KEYLESS SYSTEM]</u> .) • Is the top lock switch normal? 	Yes	Inspect and repair for an open or short circuit between the top lock switch and power retractable hardtop control module.
		No	Replace the striker switch. (See <u>CONVERTIBLE TOP REMOVAL/INSTALLATION</u> .)
8*	<p>INSPECT POWER RETRACTABLE HARDTOP LIMIT SWITCH AND DECK PANEL LIMIT SWITCH</p> <ul style="list-style-type: none"> • Monitor the power retractable 	Yes	Verify that the malfunction symptom appears without the roof and deck panel in the fully open position. If the same symptom appears, replace the power retractable hardtop control module. (See

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	<p>hardtop control module PID RHT_OP, RHT_CL, DECK_OP and DECK_CL using the M-MDS.</p> <ul style="list-style-type: none"> Do the monitoring values indicate the roof and deck panel positions properly? 		<p><u>POWER RETRACTABLE HARDTOP REMOVAL/INSTALLATION .)</u></p>
		No	<p>Inspect and repair suspected position sensor. (See <u>POWER RETRACTABLE HARDTOP LIMIT SWITCH INSPECTION .)</u> (See <u>DECK PANEL LIMIT SWITCH INSPECTION .)</u>)</p>
9*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP (OPEN) SWITCH SIGNAL OR ELSEWHERE</p> <ul style="list-style-type: none"> Monitor the power retractable hardtop control module PID SW_OP using the M-MDS while the power retractable hardtop (open) switch is pressed. Is the monitor value ON? 	Yes	<p>Go to step 10.</p>
		No	<p>Go to the next step.</p>
10	<p>INSPECT POWER RETRACTABLE HARDTOP (OPEN) SWITCH</p> <ul style="list-style-type: none"> Remove the power retractable hardtop switch. Measure the resistance between power retractable hardtop switch connector (component side) terminal A and F while the power retractable hardtop (open) switch is pressed. Is the resistance 0.99-1.01 kohms? 	Yes	<p>Inspect and repair the wiring harness between power retractable hardtop control module terminal 1H and power retractable hardtop switch terminal F at the wiring harness side connectors.</p>
		No	<p>Replace the power retractable hardtop switch.</p>
11	<p>INSPECT POWER RETRACTABLE HARDTOP LINK MECHANICS</p> <ul style="list-style-type: none"> Inspect the power retractable hardtop link mechanics. Is there any restriction or hesitation with power retractable hardtop operation? 	Yes	<p>Repair or replace the malfunctioning part.</p>
		No	<p>Replace the power retractable hardtop control module. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION .)</u>)</p>

NO. 4 POWER RETRACTABLE HARDTOP DOES NOT START TO CLOSE [POWER RETRACTABLE HARDTOP]

POWER RETRACTABLE HARDTOP DOES NOT START TO CLOSE/POWER RETRACTABLE

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HARDTOP] POSSIBLE CAUSES

4	Power retractable hardtop does not start to close
DESCRIPTION	<ul style="list-style-type: none">● Power retractable hardtop does not start to close when the power retractable hardtop (close) switch is pressed
POSSIBLE CAUSE	<ul style="list-style-type: none">● Power retractable hardtop control module cannot detect the power retractable hardtop permission condition signal.<ul style="list-style-type: none">○ Improper vehicle speed detected○ Improper transmission position detected (except for transmission neutral (MT)/N or P position (AT) detected)● Power retractable hardtop control module cannot detect the proper power retractable hardtop switch signal.<ul style="list-style-type: none">○ Power retractable hardtop (open) switch malfunction (stuck on)○ Power retractable hardtop (close) switch malfunction (stuck off)○ Open or short circuit in the wiring between the power retractable hardtop control module and the power retractable hardtop switch● Power retractable hardtop control module cannot detect proper deck panel and roof positions<ul style="list-style-type: none">○ Deck panel open position switch signal improper<ul style="list-style-type: none">● Deck panel open position switch malfunction● Deck panel open position switch improper installation● Open or short circuit in the wiring harness○ Deck panel close position switch signal improper<ul style="list-style-type: none">● Deck panel close position switch malfunction● Deck panel close position switch improper installation● Open or short circuit in the wiring harness○ Power retractable hardtop open position switch signal improper<ul style="list-style-type: none">● Power retractable hardtop open position switch malfunction● Power retractable hardtop open position switch improper installation● Open or short circuit in the wiring harness○ Power retractable hardtop close position switch signal improper<ul style="list-style-type: none">● Power retractable hardtop close position switch malfunction● Power retractable hardtop close position switch improper installation● Open or short circuit in the wiring harness● Power retractable hardtop link mechanics malfunction<ul style="list-style-type: none">○ Excessive restriction or hesitation● Power retractable hardtop control module detects a system malfunction

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DIAGNOSTIC PROCEDURE

- When performing the asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to determine whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and the wiring harness are connected correctly and undamaged.

POWER RETRACTABLE HARDTOP DOES NOT START TO CLOSE[POWER RETRACTABLE HARDTOP] DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION
1	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN OPERATION PERMISSION CONDITION SIGNAL OR ELSEWHERE</p> <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Monitor the following PIDs. (See PCM INSPECTION [LF] .) (See PID/DATA MONITOR INSPECTION [SJ6A-EL] .) <p>(See POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION .)</p> <p>PCM</p> <ul style="list-style-type: none"> VSS PNP/CP (MT) CP (MT) <p>TCM (AT)</p> <ul style="list-style-type: none"> TR <p>Power Retractable Hardtop Control Module</p> <ul style="list-style-type: none"> VSS <ul style="list-style-type: none"> Are these monitor values normal? 	<p style="text-align: center;">Yes</p> <p>Go to the next step.</p> <hr/> <p style="text-align: center;">No</p> <p>Inspect and repair the suspected signal related wiring harness and component.</p>
2*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP</p>	<p style="text-align: center;">Yes</p> <p>Go to step 4.</p>

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	<p>(OPEN) SWITCH SIGNAL OR ELSEWHERE</p> <ul style="list-style-type: none"> Monitor the power retractable hardtop control module PID SW_OP using the M-MDS without the power retractable hardtop (open) switch pressed. <p>(See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION</u> .)</p> <ul style="list-style-type: none"> Is the monitor value OFF? 	No	Go to the next step.
3	<p>INSPECT POWER RETRACTABLE HARDTOP (OPEN) SWITCH</p> <ul style="list-style-type: none"> Remove the power retractable hardtop switch. Measure the resistance between power retractable hardtop switch component side connector terminals A and F without the power retractable hardtop (open) switch pressed. <ul style="list-style-type: none"> Is the resistance 0.99-1.01 kohms? 	Yes	Replace the power retractable hardtop switch. (See <u>POWER RETRACTABLE HARDTOP SWITCH REMOVAL/INSTALLATION</u> .)
		No	Inspect and repair the wiring harness between power retractable hardtop control module terminal 1H and power retractable hardtop switch terminal F at wiring harness side connectors.
4	<p>VERIFY THAT POWER RETRACTABLE HARDTOP INDICATOR LIGHT ILLUMINATES</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Verify the power retractable hardtop indicator light status. Does the power retractable hardtop indicator light flash or illuminate? 	Yes	If the indicator light is flashing: Go to the next step. If the indicator light is illuminated: Go to step 6.
		No	Go to step 7.
5	<p>VERIFY THAT PRESENT MALFUNCTION DTC IS STORED</p> <ul style="list-style-type: none"> Connect the M-MDS to DLC-2. Retrieve the DTC for the power retractable hardtop control 	Yes	Go to the appropriate DTC inspection. (See <u>DTC TABLE[POWER RETRACTABLE HARDTOP]</u> .)
		No	Go to <u>NO. 2 POWER RETRACTABLE</u>

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	<p>module. (See <u>DTC INSPECTION[POWER RETRACTABLE HARDTOP]</u> .)</p> <ul style="list-style-type: none"> • Is there any present malfunction DTC? 		<p><u>HARDTOP INDICATOR LIGHT FLASHING[POWER RETRACTABLE HARDTOP]</u> .</p>
6*	<p>INSPECT POWER RETRACTABLE HARDTOP LIMIT SWITCH</p> <ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Monitor the power retractable hardtop control module PID RHT_OP, RHT_CL, DECK_OP and DECK_CL using the M-MDS. • Do the monitoring values indicate the roof and deck panel positions properly? 	Yes	<p>Verify that the malfunction symptom appears without the roof and deck panel in the fully open position. If the same symptom appears, replace the power retractable hardtop control module. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION</u> .)</p>
		No	<p>Inspect and repair the suspected position sensor. (See <u>POWER RETRACTABLE HARDTOP LIMIT SWITCH INSPECTION</u> .) (See <u>DECK PANEL LIMIT SWITCH INSPECTION</u> .)</p>
7*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP (CLOSE) SWITCH SIGNAL OR ELSEWHERE</p> <ul style="list-style-type: none"> • Monitor the power retractable hardtop control module PID SW_CL using the M-MDS while the power retractable hardtop (close) switch is pressed. • Is the monitor value ON? 	Yes	<p>Go to step 9.</p>
		No	<p>Go to the next step.</p>
8	<p>INSPECT POWER RETRACTABLE HARDTOP (CLOSE) SWITCH</p> <ul style="list-style-type: none"> • Remove the power retractable hardtop switch. • Measure the resistance between the power retractable hardtop switch connector (component side) terminal A and F while the open is switch pressed. • Is the resistance 2.18-2.22 kohms? 	Yes	<p>Inspect and repair the wiring harness between power retractable hardtop control module terminal 1H and power retractable hardtop switch terminal F at wiring harness side connectors.</p>
		No	<p>Replace the power retractable hardtop switch. (See <u>POWER RETRACTABLE HARDTOP SWITCH REMOVAL/INSTALLATION</u> .)</p>
9	<p>INSPECT POWER RETRACTABLE</p>	Yes	<p>Repair or replace malfunctioning part.</p>

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<p>HARDTOP LINK MECHANICS</p> <ul style="list-style-type: none"> • Inspect the power retractable hardtop link mechanics. • Is there any restriction or hesitation with power retractable hardtop operation? 	No	<p>Replace the power retractable hardtop control module. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION</u> .)</p>
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NO. 5 POWER RETRACTABLE HARDTOP STOPS WHILE OPERATING [POWER RETRACTABLE HARDTOP]

POWER RETRACTABLE HARDTOP STOPS WHILE OPERATING[POWER RETRACTABLE HARDTOP] POSSIBLE CAUSES

5	Power retractable hardtop stops while operating
DESCRIPTION	<ul style="list-style-type: none"> • Power retractable hardtop stops while the power retractable hardtop is opening/closing
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deck panel does not operate while power retractable hardtop is operating <ul style="list-style-type: none"> ○ Deck panel cannot move <ul style="list-style-type: none"> • Open or short circuit or poor connection in the wiring harness between the left/right deck panel motor and power retractable hardtop control module • Left/right deck panel motor malfunction • Deck panel link mechanics malfunction (excessive restriction or hesitation) ○ Deck panel position cannot be detected <ul style="list-style-type: none"> • Deck panel open position switch malfunction • Deck panel close position switch malfunction • Open or short circuit or poor connection in the wiring harness between the deck panel open position switch and the power retractable hardtop control module • Open or short circuit or poor connection in wiring harness between deck panel close position switch and power retractable hardtop control module • Foreign material caught in mechanism. • Roof does not operate while the power retractable hardtop is operating <ul style="list-style-type: none"> ○ Roof cannot move <ul style="list-style-type: none"> • Open or short circuit or poor connection in the wiring harness between the left/right roof motor and the power retractable hardtop control module • Left/right roof motor malfunction • Roof link mechanics malfunction (excessive restriction or

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	<p style="text-align: center;">hesitation)</p> <ul style="list-style-type: none"> ○ Roof position cannot be detected <ul style="list-style-type: none"> ● Power retractable hardtop open position switch malfunction ● Power retractable hardtop close position switch malfunction ● Open or short circuit or poor connection in the wiring harness between the power retractable hardtop open position switch and the power retractable hardtop control module ● Open or short circuit or poor connection in the wiring harness between the power retractable hardtop close position switch and the power retractable hardtop control module ● Foreign material caught in mechanism. ● Power retractable hardtop switch signal is interrupted while the power retractable hardtop is operating <ul style="list-style-type: none"> ○ Power retractable hardtop (open) switch malfunction (Contact point defective) ○ Power retractable hardtop (close) switch malfunction (Contact point defective) ○ Open or short circuit or poor connection in the wiring harness between the power retractable hardtop control module and the power retractable hardtop switch ● Power retractable hardtop control module detects a system malfunction
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DIAGNOSTIC PROCEDURE

- When performing the asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to determine whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and the wiring harness are connected correctly and undamaged.

POWER RETRACTABLE HARDTOP STOPS WHILE OPERATING[POWER RETRACTABLE HARDTOP] DIAGNOSTIC PROCEDURE

STEP	INSPECTION		ACTION
1	<p>VERIFY THAT POWER RETRACTABLE HARDTOP INDICATOR LIGHT ILLUMINATES</p> <ul style="list-style-type: none"> ● Turn the ignition switch to the ON position. ● Verify the power retractable hardtop indicator light status. ● Does the power retractable hardtop indicator light flash? 	Yes	Go to the next step.
		No	Go to step 3.
2	VERIFY THAT PRESENT	Yes	Go to the appropriate DTC inspection.

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	<p>MALFUNCTION DTC STORED</p> <ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Retrieve DTC for power retractable hardtop control module. (See <u>DTC INSPECTION[POWER RETRACTABLE HARDTOP]</u> .) • Is there a DTC present? 		(See <u>DTC TABLE[POWER RETRACTABLE HARDTOP]</u> .)
		No	Go to <u>NO. 2 POWER RETRACTABLE HARDTOP INDICATOR LIGHT FLASHING [POWER RETRACTABLE HARDTOP]</u> .
3	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN DECK PANEL OR ELSEWHERE</p> <ul style="list-style-type: none"> • Verify the malfunction symptom. • Does the deck panel operation stop during the open or close operation? 	Yes	<p>Stops during the deck panel open operation: Go to the next step.</p> <p>Stops during the deck panel close operation:</p> <ul style="list-style-type: none"> • Go to step 7.
		No	Go to step 14.
4	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN DECK PANEL OPEN POSITION SWITCH OR ELSEWHERE</p> <ul style="list-style-type: none"> • Monitor the power retractable hardtop control module PID DECK_OP using the M-MDS at the position where the deck panel does not operate. • Is the monitor value ON (deck panel fully open)? 	Yes	Go to the next step.
		No	Go to step 10.
5	<p>INSPECT DECK PANEL OPEN POSITION SWITCH</p> <ul style="list-style-type: none"> • Inspect the deck panel open position switch. (See <u>DECK PANEL LIMIT SWITCH INSPECTION</u> .) • Is the deck panel open position switch normal? 	Yes	Go to the next step.
		No	Replace the deck panel limit switch. (See <u>DECK PANEL LIMIT SWITCH REMOVAL/INSTALLATION</u> .)
6*	<p>INSPECT DECK PANEL OPEN POSITION SWITCH WIRING HARNESS</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (16-pin) and the deck panel open position switch connectors. 	Yes	Adjust the deck panel open position switch installation.
		No	Repair for a short to the ground circuit.

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	<ul style="list-style-type: none"> • Verify the continuity between power retractable hardtop control module terminal 3F and ground. • Is there continuity? 		
7	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN DECK PANEL CLOSE POSITION SWITCH OR ELSEWHERE</p> <ul style="list-style-type: none"> • Monitor the power retractable hardtop control module PID DECK_CL using the M-MDS when the position where the deck panel could not operate. • Is the monitor value ON (deck panel fully closed)? 	Yes	Go to the next step.
		No	Go to step 10.
8	<p>INSPECT DECK PANEL CLOSE POSITION SWITCH</p> <ul style="list-style-type: none"> • Inspect the deck panel close position switch. (See <u>DECK PANEL LIMIT SWITCH INSPECTION</u> .) • Is the deck panel close position switch normal? 	Yes	Go to the next step.
		No	Replace the deck panel limit switch. (See <u>DECK PANEL LIMIT SWITCH REMOVAL/INSTALLATION</u> .)
9*	<p>INSPECT DECK PANEL CLOSE POSITION SWITCH WIRING HARNESS</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (16-pin) and the deck panel close position switch connectors. • Verify that the continuity between the power retractable hardtop control module terminal 3F and ground. • Is there any continuity? 	Yes	Adjust the deck panel close position switch installation.
		No	Repair for a short to the ground circuit.
10*	<p>INSPECT DECK PANEL MOTOR WIRING HARNESS</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (16-pin, 24- 	Yes	Repair or replace malfunctioning part.

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	<p>pin), and deck panel motor (left, right)(6-pin) connectors on both sides.</p> <ul style="list-style-type: none"> • Inspect for an open or short circuit and poor connection at the following terminals: <ul style="list-style-type: none"> ○ Power retractable hardtop control module terminal 3M-deck panel motor (right) terminal A ○ Power retractable hardtop control module terminal 3E-deck panel motor (right) terminal E ○ Power retractable hardtop control module terminal 1K-deck panel motor (right) terminal F ○ Power retractable hardtop control module terminal 3H-deck panel motor (left) terminal A ○ Power retractable hardtop control module terminal 3P-deck panel motor (left) terminal E ○ Power retractable hardtop control module terminal 1O-deck panel motor (left) terminal F • Is there an open or short circuit, or a poor connection? 	No	Go to the next step.
11	<p>INSPECT DECK PANEL MOTOR</p> <ul style="list-style-type: none"> • Inspect the deck panel motors on both sides. (See <u>DECK PANEL MOTOR INSPECTION</u> .) • Are both deck panel motors normal? 	Yes	Go to the next step.
		No	Replace suspected deck panel motor. (See <u>DECK PANEL MOTOR REMOVAL/INSTALLATION</u> .)
12	<p>INSPECT DECK PANEL MOTOR HALL SENSOR</p> <ul style="list-style-type: none"> • Measure the pulse profiles for the following power retractable hardtop control module (24-pin) while the 	Yes	Go to the next step.
		No	Replace the suspected deck panel motor.

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	<p>deck panel is operating using the oscilloscope.</p> <ul style="list-style-type: none"> ○ Terminal 1K (right deck panel motor hall sensor) ○ Terminal 1O (left deck panel motor hall sensor) <p>● Is the pulse profile normal?</p> <p>(See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION</u>.)</p>		(See <u>DECK PANEL MOTOR REMOVAL/INSTALLATION</u> .)
13	<p>INSPECT POWER RETRACTABLE HARDTOP LINK MECHANICS</p> <ul style="list-style-type: none"> ● Inspect the power retractable hardtop link mechanics. ● Is there any restriction or hesitation for the power retractable hardtop operation? 	Yes	Repair or replace the malfunctioning part.
		No	Go to step 25.
14	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN ROOF OR ELSEWHERE</p> <ul style="list-style-type: none"> ● Verify that malfunction symptom. ● Does the roof operation stop during the open or close operation? 	Yes	<p>Stops during the roof open operation:</p> <ul style="list-style-type: none"> ● Go to the next step. <p>Stops during the roof close operation:</p> <ul style="list-style-type: none"> ● Go to step 18.
		No	Go to step 25.
15	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP OPEN POSITION SWITCH OR ELSEWHERE</p> <ul style="list-style-type: none"> ● Monitor the power retractable hardtop control module PID RHT_OP using the M-MDS at the position where the roof does operate. ● Is the monitor value on (roof fully open)? 	Yes	Go to the next step.
		No	Go to step 22.
16	<p>INSPECT POWER RETRACTABLE HARDTOP OPEN POSITION SWITCH</p> <ul style="list-style-type: none"> ● Inspect the power retractable hardtop open position switch. 	Yes	Go to the next step.
		No	Replace the power retractable hardtop limit switch. (See <u>POWER RETRACTABLE HARDTOP LIMIT</u>)

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	<p>(See <u>POWER RETRACTABLE HARDTOP LIMIT SWITCH INSPECTION</u> .)</p> <ul style="list-style-type: none"> • Is the power retractable hardtop open position switch normal? 		<p><u>SWITCH REMOVAL/INSTALLATION</u> .)</p>
17*	<p>INSPECT POWER RETRACTABLE HARDTOP OPEN POSITION SWITCH WIRING HARNESS</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (24-pin) and the power retractable hardtop open position switch connectors. • Verify that continuity between power retractable hardtop control module terminal 1T-ground. • Is there continuity? 	Yes	Adjust the power retractable hardtop open position switch installation.
		No	Repair for a short to the ground circuit.
18	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN POWER RETRACTABLE HARDTOP CLOSE POSITION SWITCH OR ELSEWHERE</p> <ul style="list-style-type: none"> • Monitor the power retractable hardtop control module PID RHT_CL using the M-MDS at the position where the roof could not operate. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION</u> .) • Is the monitor value on (roof fully closed)? 	Yes	Go to the next step.
		No	Go to step 20.
19	<p>INSPECT POWER RETRACTABLE HARDTOP CLOSE POSITION SWITCH</p> <ul style="list-style-type: none"> • Inspect the power retractable hardtop close position switch. (See <u>POWER RETRACTABLE HARDTOP LIMIT SWITCH INSPECTION</u> .) • Is the power retractable hardtop close position switch normal? 	Yes	Go to the next step.
		No	Replace the power retractable hardtop limit switch. (See <u>POWER RETRACTABLE HARDTOP LIMIT SWITCH REMOVAL/INSTALLATION</u> .)
20*	<p>INSPECT POWER RETRACTABLE</p>	Yes	Adjust the power retractable hardtop

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<p>HARDTOP CLOSE POSITION SWITCH WIRING HARNESS</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (24-pin) and the deck panel close position switch connectors. • Verify that continuity between power retractable hardtop control module terminal 1F-ground. • Is there any continuity? 	<p>close position switch installation position.</p>	
	<p style="text-align: center;">No</p> <p>Repair for a short to the ground circuit.</p>	
<p>21*</p>	<p>INSPECT ROOF MOTOR WIRING HARNESS</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the power retractable hardtop control module (16-pin, 24-pin), and the roof motor (left, right) (6-pin) connector on both sides. • Inspect for the open or short circuit and poor connection at the following terminals: <ul style="list-style-type: none"> ○ Power retractable hardtop control module terminal 3I-roof motor (right) terminal A ○ Power retractable hardtop control module terminal 3A-roof motor (right) terminal E ○ Power retractable hardtop control module terminal 1I-roof motor (right) terminal D ○ Power retractable hardtop control module terminal 3C-roof motor (left) terminal A ○ Power retractable hardtop control module terminal 3L-roof motor (left) terminal E ○ Power retractable hardtop control module terminal 1M-roof motor (left) terminal D • Is there an open or short circuit, or a 	<p style="text-align: center;">Yes</p> <p>Repair or replace the malfunctioning part.</p>
		<p style="text-align: center;">No</p> <p>Go to the next step.</p>

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	poor connection?		
22	INSPECT ROOF MOTOR <ul style="list-style-type: none"> • Inspect the both side roof motor hall sensors on both side. (See ROOF MOTOR INSPECTION .) • Are both roof motors normal? 	Yes	Go to the next step.
		No	Replace the suspected roof motor. (See ROOF MOTOR REMOVAL/INSTALLATION .)
23	INSPECT ROOF MOTOR HALL SENSOR <ul style="list-style-type: none"> • Measure the pulse profiles for the following power retractable hardtop control module (24-pin) while the roof is operating using the oscilloscope. <ul style="list-style-type: none"> ○ Terminal 1I (right side roof motor hall sensor) ○ Terminal 1M (left side roof motor hall sensor) • Is the pulse profile normal? (See POWER RETRACTABLE HARDTOP CONTROL MODULE INSPECTION .) 	Yes	Go to the next step.
		No	Replace the suspected roof motor. (See ROOF MOTOR REMOVAL/INSTALLATION .)
24	INSPECT POWER RETRACTABLE HARDTOP LINK MECHANICS <ul style="list-style-type: none"> • Inspect the roof link mechanics. • Does the roof operation stop during open or close operation? 	Yes	Repair or replace the malfunctioning part.
		No	Go to the next step.
25	INSPECT POWER RETRACTABLE HARDTOP SWITCH <ul style="list-style-type: none"> • Remove the power retractable hardtop switch. • Measure the resistance between power retractable hardtop switch connector (component side) terminals A and F. • Is the resistance normal? <p>Power retractable hardtop (open) switch pressed: 0.99-1.01 kohms Power retractable hardtop (close) switch</p>	Yes	Go to the next step.
		No	Replace the power retractable hardtop switch. (See POWER RETRACTABLE HARDTOP SWITCH REMOVAL/INSTALLATION .)

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	pressed: 2.18-2.22 kohms		
26*	INSPECT POWER RETRACTABLE HARDTOP SWITCH WIRING HARNESS <ul style="list-style-type: none">• Turn the ignition switch to the ON position.• Disconnect the power retractable hardtop control module (24-pin) and power retractable hardtop switch connectors.• Inspect for an open or short circuit and poor connection between the power retractable hardtop control module terminal 1H and the power retractable hardtop switch terminal F.• Is there any open or short circuit, or poor connection?	Yes	Repair or replace the malfunctioning part.
		No	Replace the power retractable hardtop control module. (See <u>POWER RETRACTABLE HARDTOP CONTROL MODULE REMOVAL/INSTALLATION</u> .)