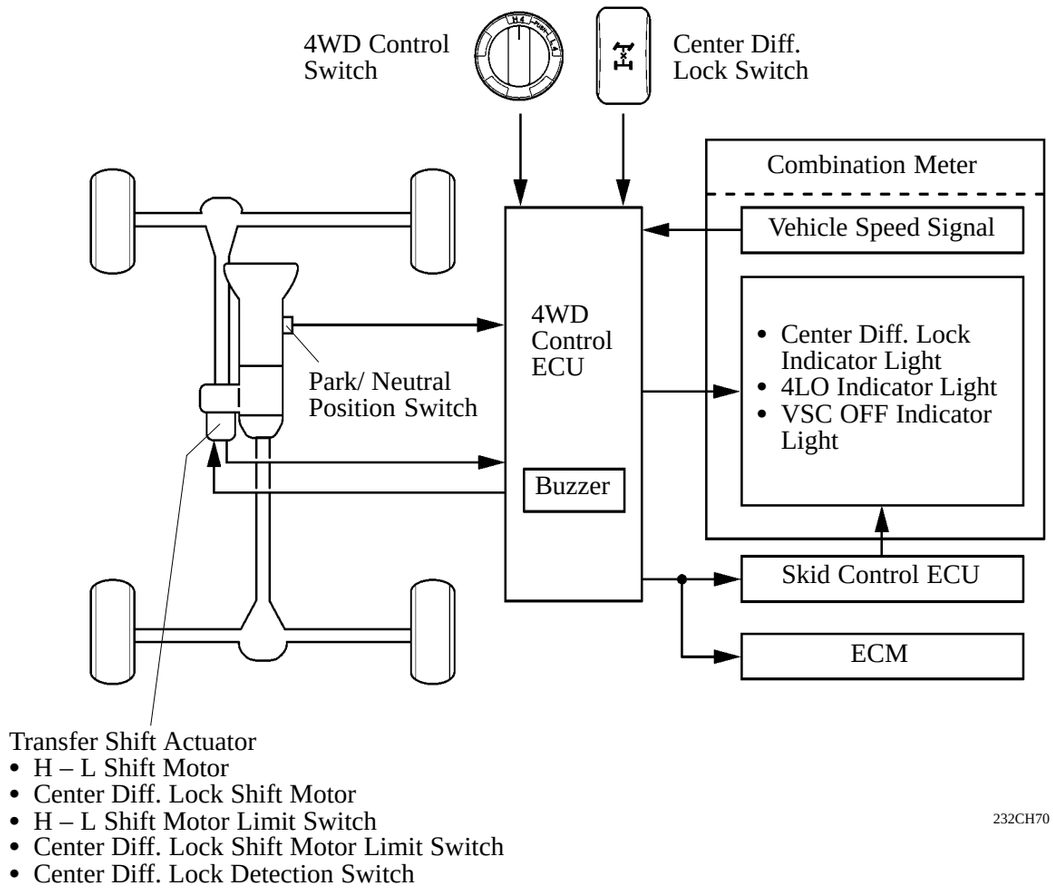
■4WD SYSTEM

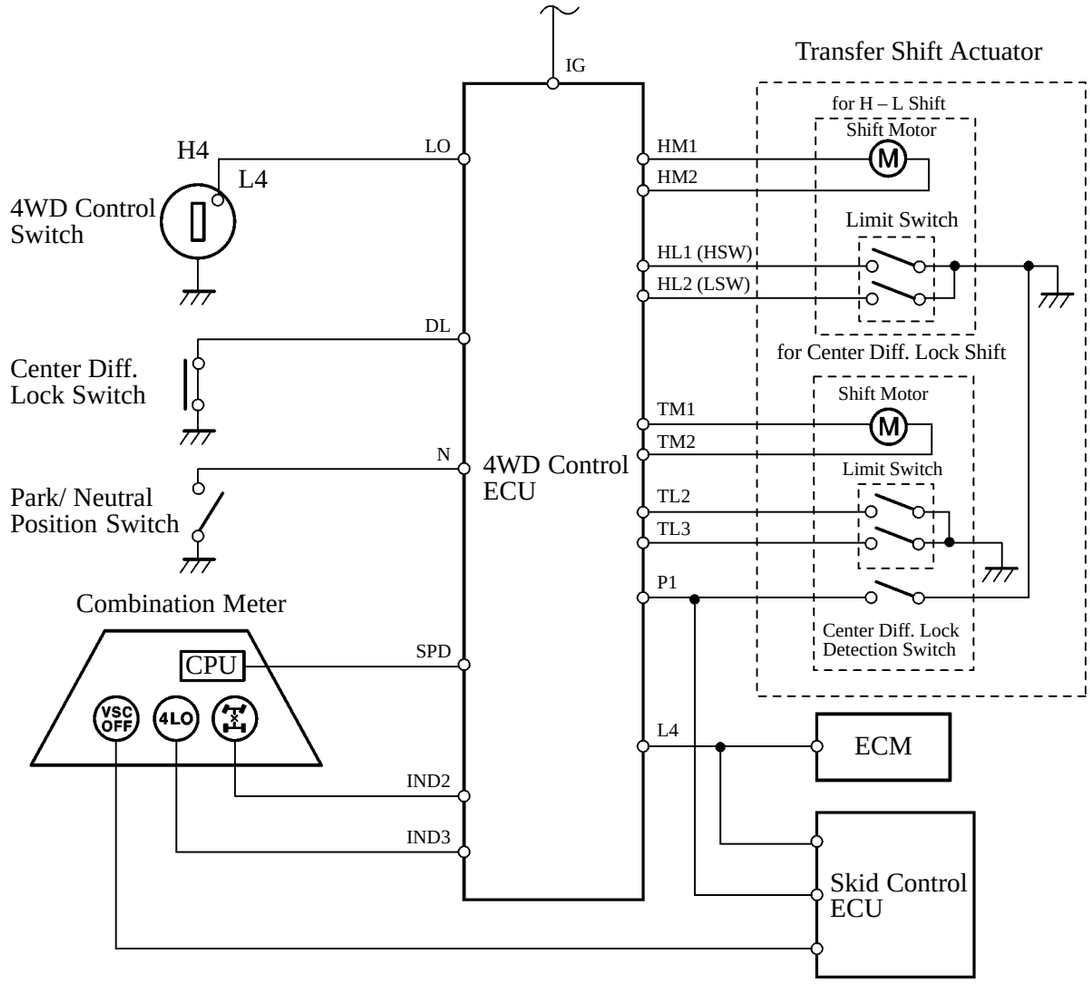
1. General

On the ’03 4Runner, the 4WD mode switching is effected by the 4WD control switch and the center differential lock switch operation, instead of the transfer shift lever. Through these switch signals, the 4WD control ECU actuates the 2 shift motors.

▶ System Diagram ◀



▶ Wiring Diagram ◀



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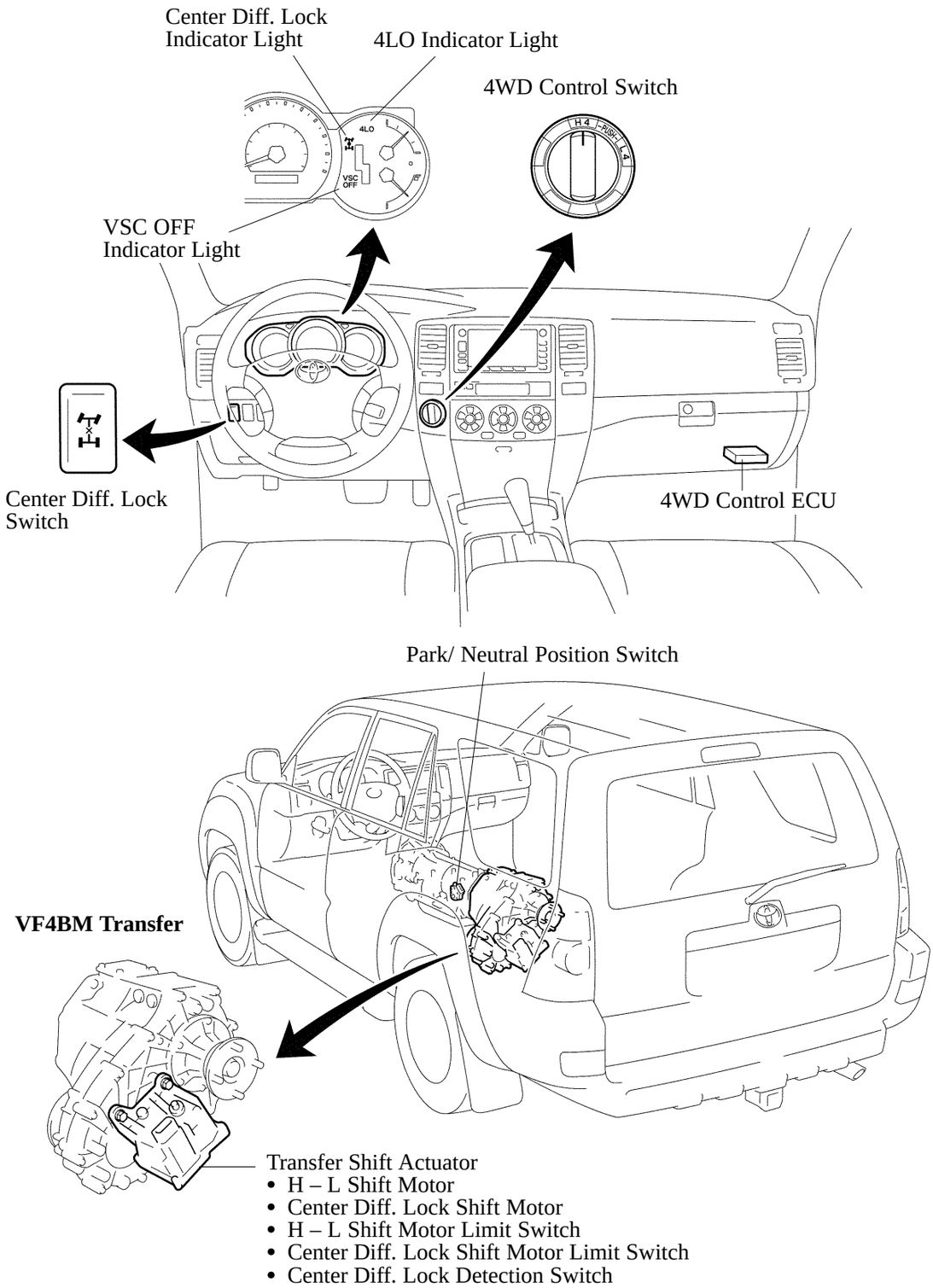
2. Layout of Component



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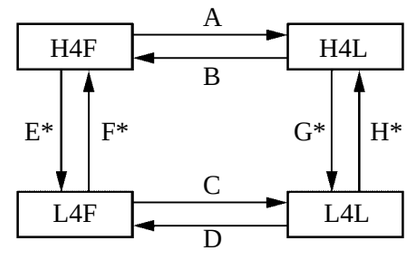
3. System Operation

General

As indicated by the 4WD mode switching pattern that is illustrated on the right, the 4WD control switch and the center differential lock switch do not operate simultaneously.

- This signal becomes inactive even if the center differential lock switch is turned ON during H – L switching.
- If the 4WD control switch is turned ON during center differential lock switching, H – L switching is effected after locking the center differential.

▶ 4WD Mode Switching Pattern ◀



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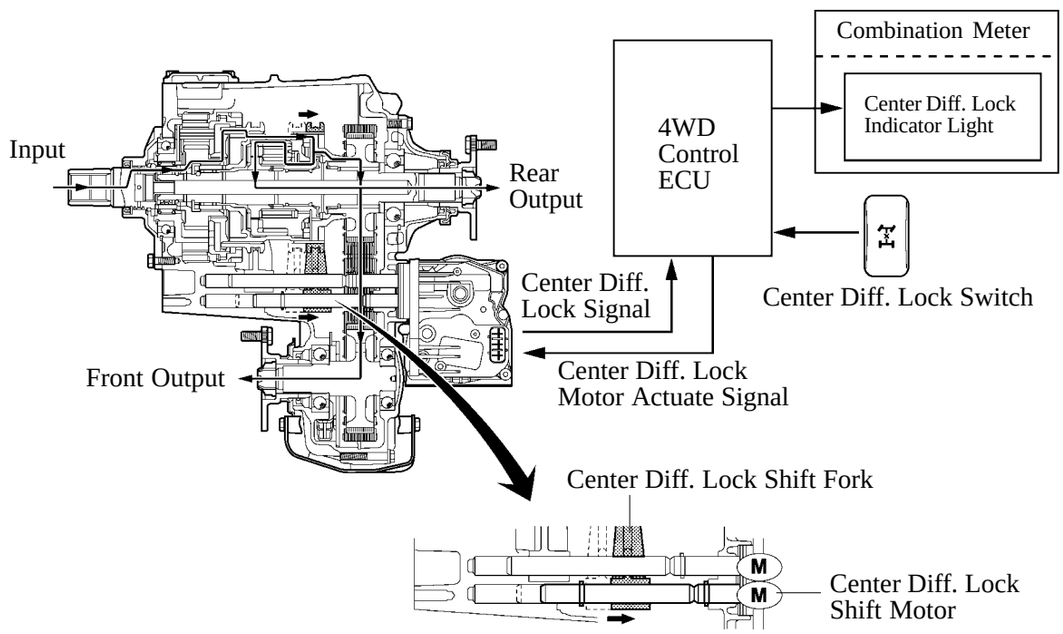
*: H – L switching cannot be made unless the vehicle speed is less than 5 km/h (3 mph) and the A/T shift position is N.

A. H4F → H4L

- When the center diff. lock switch turns ON, this signal is input into the 4WD control ECU, and the 4WD control ECU actuates the center diff. lock shift motor in the transfer shift actuator.
  Accordingly, the center diff. lock shift motor moves the center diff. lock shift fork to the right, locks the center diff. and assumes the H4L mode.
- At this time, the 4WD control ECU detects the state of the center differential through the center diff. lock shift motor limit switch and center diff. lock detection switch. The 4WD control ECU causes the center differential lock indicator light to blink during switching, and to turn ON when the center differential is locked.



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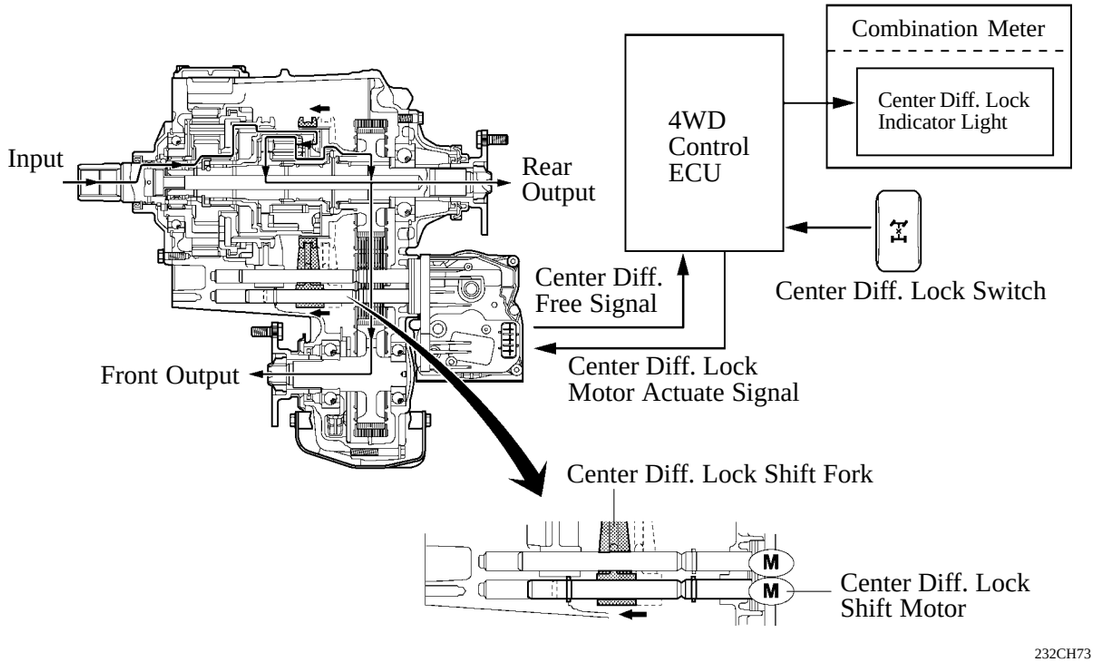
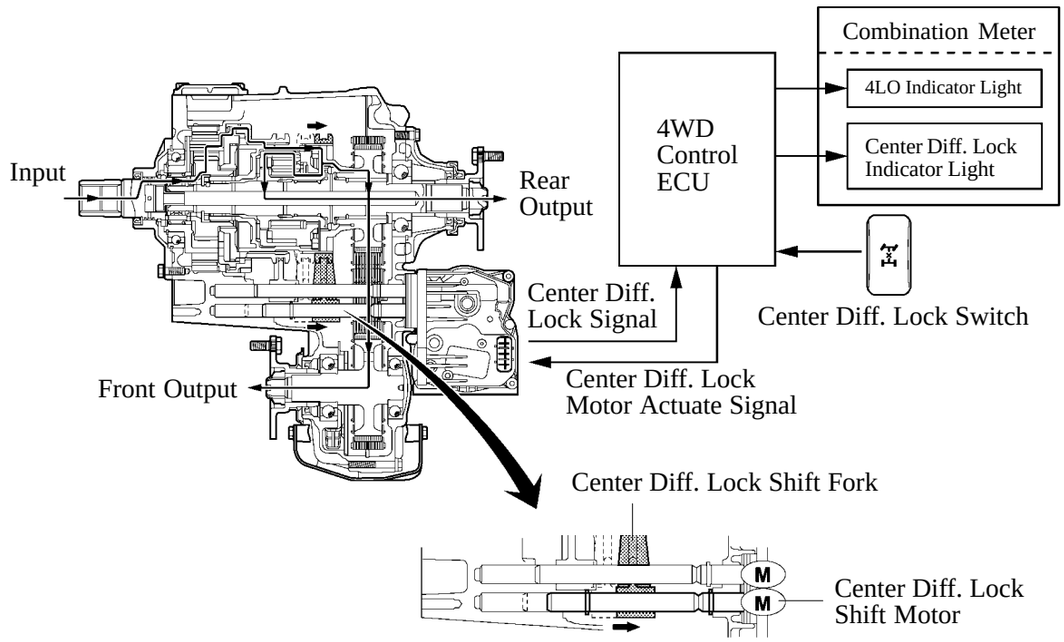
B. H4L → H4F

- When the center diff. lock switch turns OFF, this signal is input into the 4WD control ECU, and the 4WD control ECU actuates the center diff. lock shift motor in the transfer shift actuator.
  Accordingly, the center diff. lock shift motor moves the center diff. lock shift fork to the left, frees the center diff. and assumes the H4F mode.
- At this time, the 4WD control ECU detects the state of the center differential through the center diff. lock shift motor limit switch and center diff. lock detection switch. The 4WD control ECU causes the center differential lock indicator light to blink during switching, and to turn OFF when the center differential is freed.



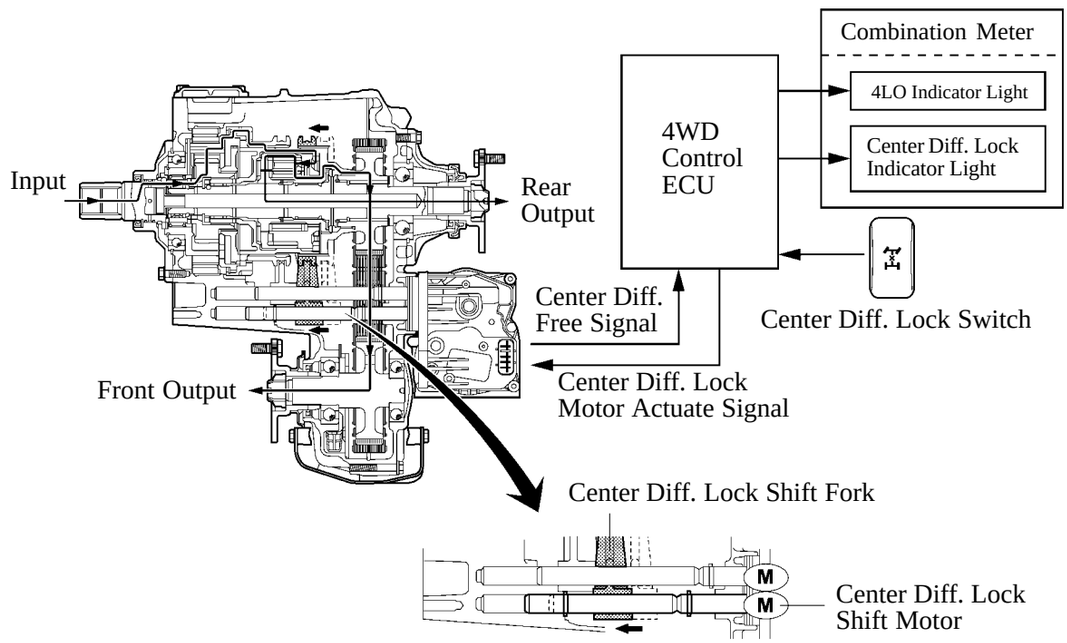
C. L4F → L4L

- When the center diff. lock switch turns ON, this signal is input into the 4WD control ECU, and the 4WD control ECU actuates the center diff. lock shift motor in the transfer shift actuator.
  Accordingly, the center diff. lock shift motor moves the center diff. lock shift fork to the right, locks the center diff. and assumes the L4L mode.
- At this time, the 4WD control ECU detects the state of the center differential through the center diff. lock shift motor limit switch and center diff. lock detection switch. The 4WD control ECU causes the center differential lock indicator light to blink during switching, and to turn ON when the center differential is locked.



D. L4L → L4F

- When the center diff. lock switch turns OFF, this signal is input into the 4WD control ECU, and the 4WD control ECU actuates the center diff. lock shift motor in the transfer shift actuator.
  Accordingly, the center diff. lock shift motor moves the center diff. lock shift fork to the left, frees the center diff. and assumes the L4F mode.
- At this time, the 4WD control ECU detects the state of the center differential through the center diff. lock shift motor limit switch and center diff. lock detection switch. The 4WD control ECU causes the center differential lock indicator light to blink during switching, and to turn OFF when the center differential is freed.



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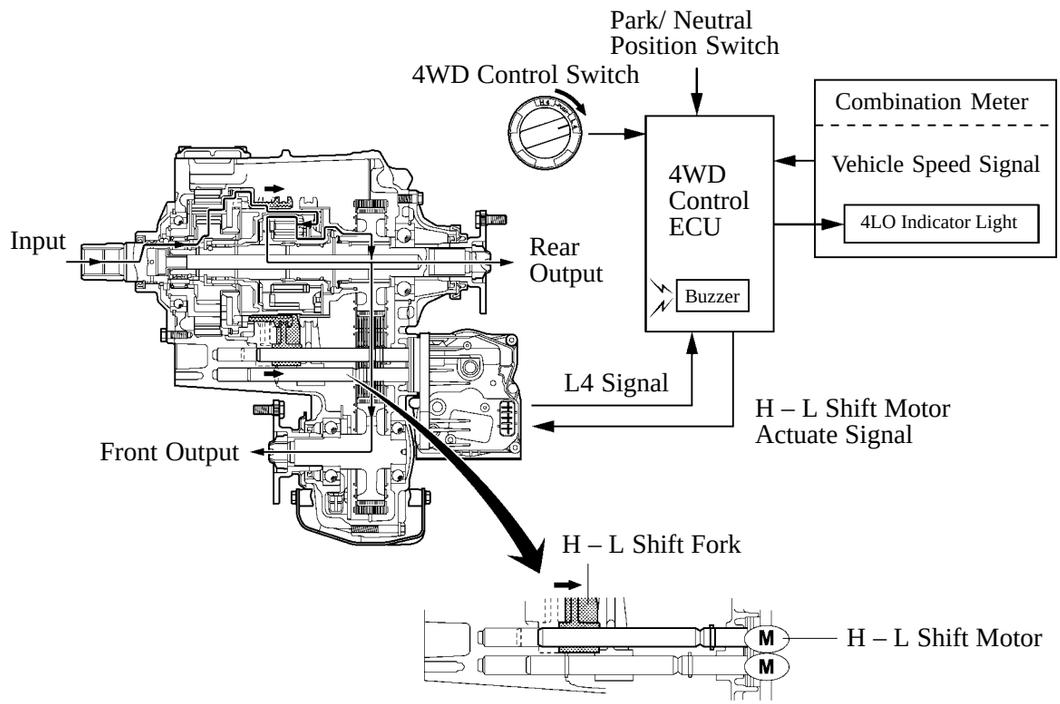
E. H4F → L4F

- When the 4WD control switch turns to L4 position, this signal, vehicle speed signal [5 km/h (3 mph) or less], and park/neutral position switch (N position) signal are input into the 4WD control ECU, and the 4WD control ECU actuates the H – L shift motor in the transfer shift actuator.
  Accordingly, the H – L shift motor moves the H – L shift fork to the right and assumes the L4F mode.
- At this time, the 4WD control ECU detects the state of the H – L switching through the H – L shift motor limit switch, causes the 4LO indicator light to blink during the switching, and to turn ON in the L4 mode.
- H – L switching cannot be made unless the vehicle speed is 5 km/h (3 mph) or less and the A/T shift position is N. If the 4WD control switch is operated in any other condition, the 4LO indicator light blinks and the buzzer sounds in the 4WD control ECU. (To cancel: 4WD control switch is returned to its original position.)



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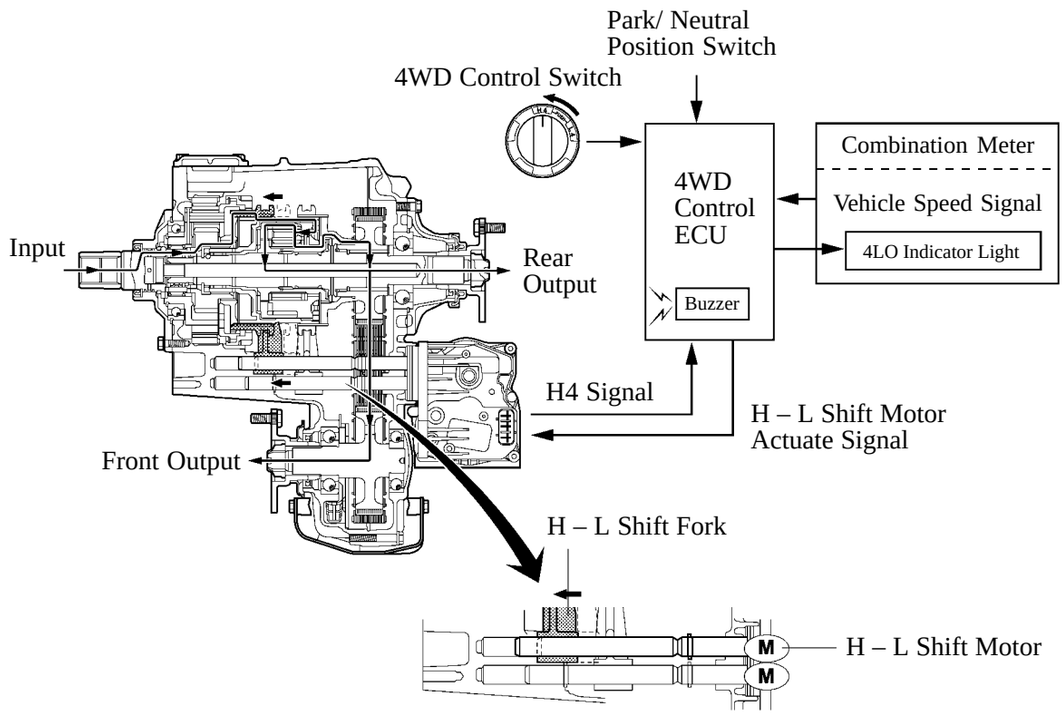
F. L4F → H4F

- When the 4WD control switch turns to H4 position, this signal, vehicle speed signal [5 km/h (3 mph) or less], and park/neutral position switch (N position) signal are input into the 4WD control ECU, and the 4WD control ECU actuates the H – L shift motor in the transfer shift actuator.
  Accordingly, the H – L shift motor moves the H – L shift fork to the left and assumes the H4F mode.
- At this time, the 4WD control ECU detects the state of the H – L switching through the H – L shift motor limit switch, causes the 4LO indicator light to blink during the switching, and to turn OFF in the L4 mode.
- H – L switching cannot be made unless the vehicle speed is 5 km/h (3 mph) or less and the A/T shift position is N. If the 4WD control switch is operated in any other condition, the 4LO indicator light blinks and the buzzer sounds in the 4WD control ECU. (To cancel: 4WD control switch is returned to its original position.)



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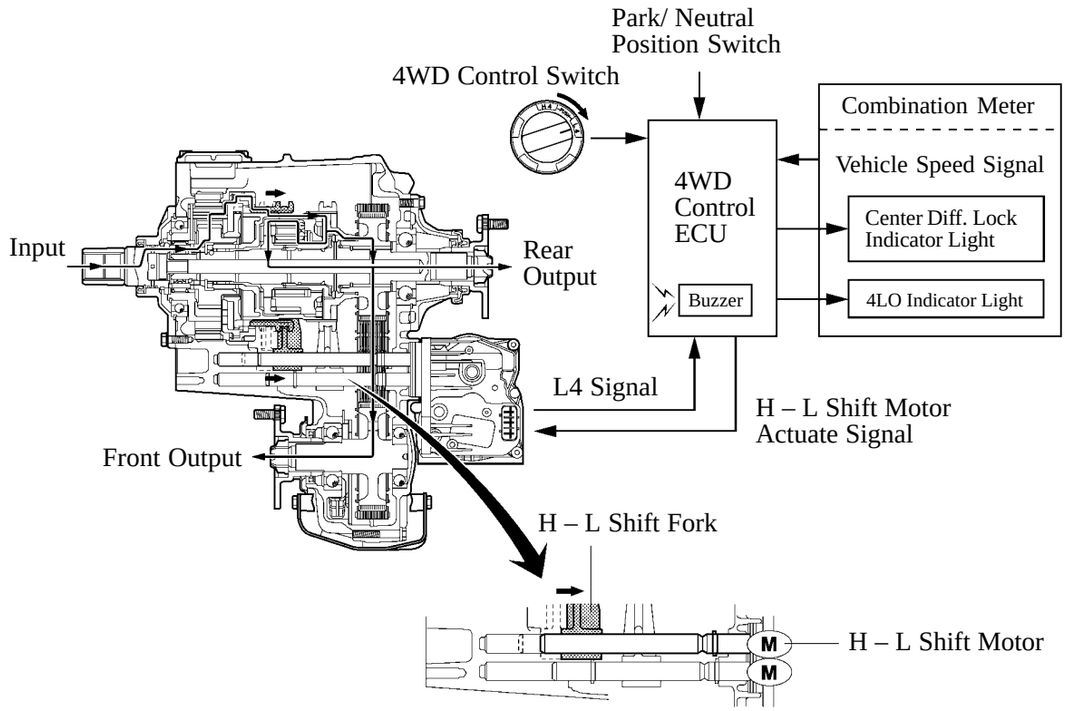
G. H4L → L4L

- When the 4WD control switch turns to L4 position, this signal, vehicle speed signal [5 km/h (3 mph) or less], and park/neutral position switch (N position) signal are input into the 4WD control ECU, and the 4WD control ECU actuates the H – L shift motor in the transfer shift actuator.
  Accordingly, the H – L shift motor moves the H – L shift fork to the right and assumes the L4L mode.
- At this time, the 4WD control ECU detects the state of the H – L switching through the H – L shift motor limit switch, causes the 4LO indicator light to blink during the switching, and to turn ON in the L4 mode.
- H – L switching cannot be made unless the vehicle speed is 5 km/h (3 mph) or less and the A/T shift position is N. If the 4WD control switch is operated in any other condition, the 4LO indicator light blinks and the buzzer sounds in the 4WD control ECU. (To cancel: 4WD control switch is returned to its original position.)



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H. L4L → H4L

- When the 4WD control switch turns to H4 position, this signal, vehicle speed signal [5 km/h (3 mph) or less], and park/neutral position switch (N position) signal are input into the 4WD control ECU, and the 4WD control ECU actuates the H – L shift motor in the transfer shift actuator.
  Accordingly, the H – L shift motor moves the H – L shift fork to the left and assumes the H4L mode.
- At this time, the 4WD control ECU detects the state of the H – L switching through the H – L shift motor limit switch, causes the 4LO indicator light to blink during the switching, and to turn OFF in the L4 mode.
- H – L switching cannot be made unless the vehicle speed is 5 km/h (3 mph) or less and the A/T shift position is N. If the 4WD control switch is operated in any other condition, the 4LO indicator light blinks and the buzzer sounds in the 4WD control ECU. (To cancel: 4WD control switch is returned to its original position.)