



Service Information System

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Special Instruction

Installation Instruction for Intermittent Wiper Switch for Certain On Highway Truck {7000}

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Installation Instruction for Intermittent Wiper Switch for Certain On Highway Truck{7000}

SMCS - 7000

On Highway Truck:

CT660 (S/N: TRK1-UP; TKL1-UP; TJS1-UP; TGT1-UP; TSW1-UP; TSY1-UP)

Introduction

The purpose of this document is to provide recommended installation instruction for intermittent wiper switch.

Do not perform any procedure that is outlined in this publication until you understand the information that is contained in this document.

Note: CAT units built prior to February 2013 were equipped with a three state switch.



Illustration 1

g03583672

Three state switch



Illustration 2

g03584057

Intermittent switch (1)

This document will aid in the replacement of a three state switch to an intermittent switch.

Safety



Do not operate or work on this machine unless you have read and understand the instructions and warnings in the Operation and Maintenance Manuals. Failure to follow the instructions or heed the warnings could result in injury or death. Contact your Cat dealer for replacement manuals. Proper care is your responsibility.



Accidental engine starting can cause injury or death to personnel working on the equipment.

To avoid accidental engine starting, disconnect the battery cable from the negative (-) battery terminal. Completely tape all metal surfaces of the disconnected battery cable end in order to prevent contact with other metal surfaces which could activate the engine electrical system.

Place a Do Not Operate tag at the Start/Stop switch location to inform personnel that the equipment is being worked on.

Place the machine on firm ground, lower all implements and release any pressure from the hydraulic system before starting this procedure.

Required Parts

Table 1

Required Parts			
Item	Qty	Part Number	Description
1	3 ⁽¹⁾	358-3424	Fastener
2	2	372-8474	Screw
3	1 ⁽²⁾	379-1113	Screw
4	1	433-2878	Steering Column Switch
5	1	433-2879	MSM
6	1	-	Harness

⁽¹⁾ Up to 3 may be needed but are not required.

⁽²⁾ This part is not required but may be needed.

Installation Instructions

Verify wiper operation before starting the installation.

If any of the functions, such as park or washer, do not work, fix the problem before doing the installation.

The reason to fix is because you will be reusing some of the hardware and wiring. Failure to do this step can lead to extensive troubleshooting time on the wrong parts.

The installation will require the replacement of the MSM unit, installation of overlay harness, installation of new switch.



Illustration 3

g03411684

MSM unit (6)



Illustration 4

g03411697

Overlay harness (7)



Illustration 5

g03411705

New switch (5)

Installation of MSM Unit

The MSM unit is located behind the lower trim panel on passenger side. Remove all the lower trim panel on the passenger side.

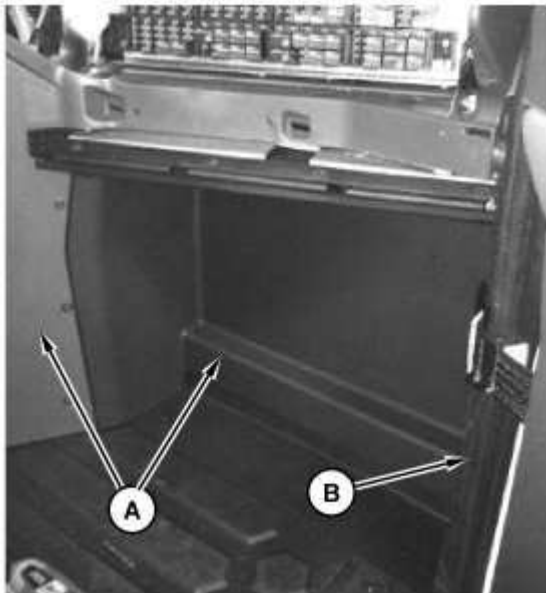


Illustration 6

g03414400

(A) Trim panels

(B) Right trim panel

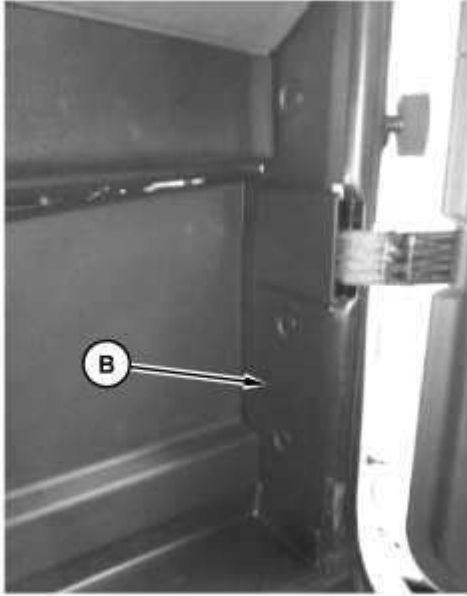


Illustration 7

g03414417

(B) Right trim panel



Illustration 8

g03414421

Push tree fasteners (1)

Right side kick panel (B) is fastened with three push tree connectors. Care must be taken not to damage trim panels in removal. The push trees may be damaged, install new trees if needed.

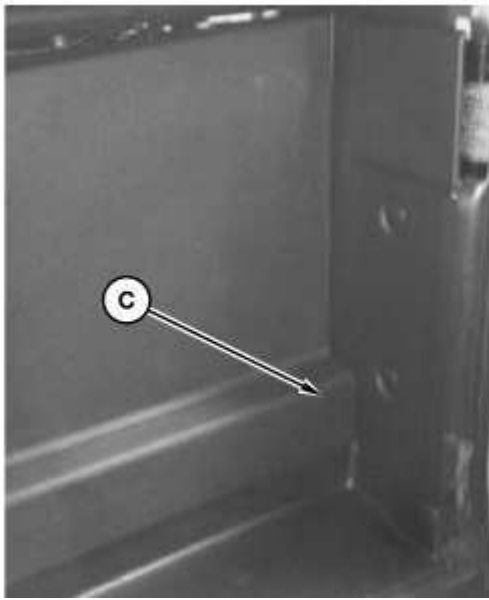


Illustration 9

g03414430

(C) Screw

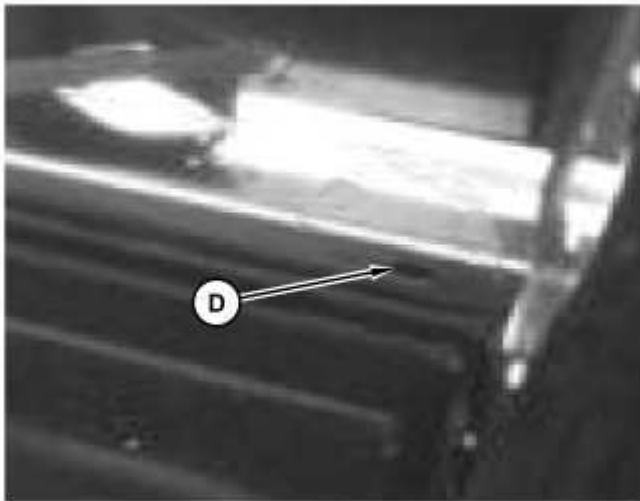


Illustration 10

g03414443

(D) Slot

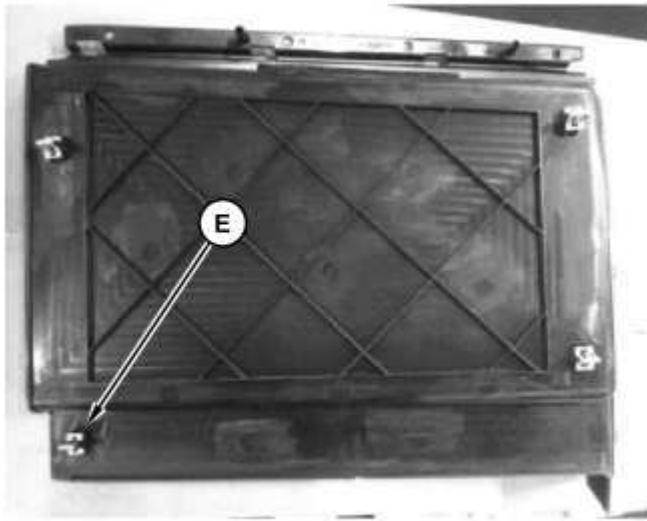


Illustration 11

g03414464

(E) Body Clip

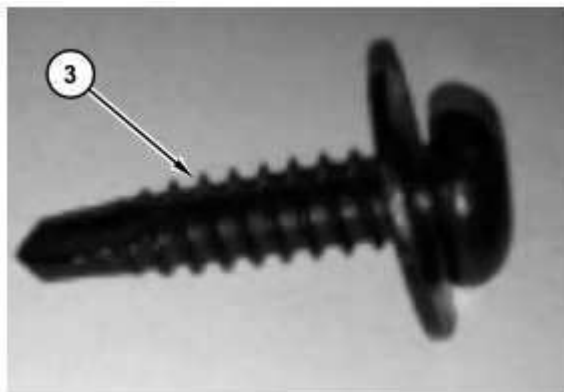


Illustration 12

g03583984

(3) Self tapping screw

Lower trim panel under fuse box is held by four screws (C) on top and four body clips (E). Care must be taken when removing panel. Pull straight out on panel. Lower right body clip may break off. If clip breaks off, install self tapping screw. Locate screw just to the right of the body clip to avoid slot (D) in support.



Illustration 13

g03414650

(F) Mounting bolts for MSM

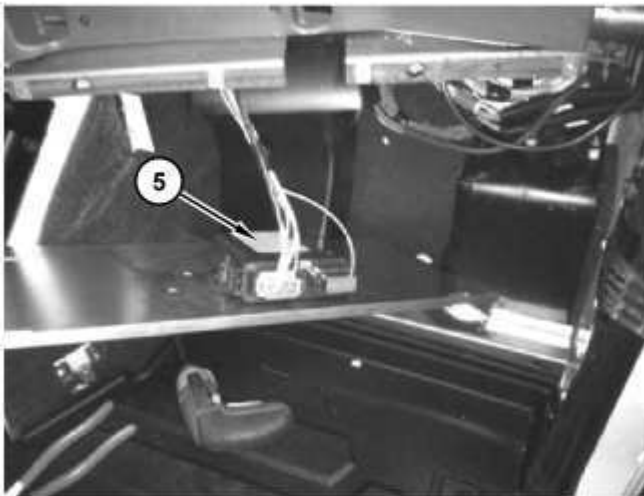


Illustration 14

g03680962

(5) New MSM

After removing trim panel, remove existing MSM that is located behind the aluminum kick plate. Remove kick plate, disconnect module, install new module (5). Wait to reinstall kick plate until after harness has been installed.

Installation of Overlay Harness



Illustration 15

g03414707

This component is a complete overlay/replacement harness. No wiring will be removed.

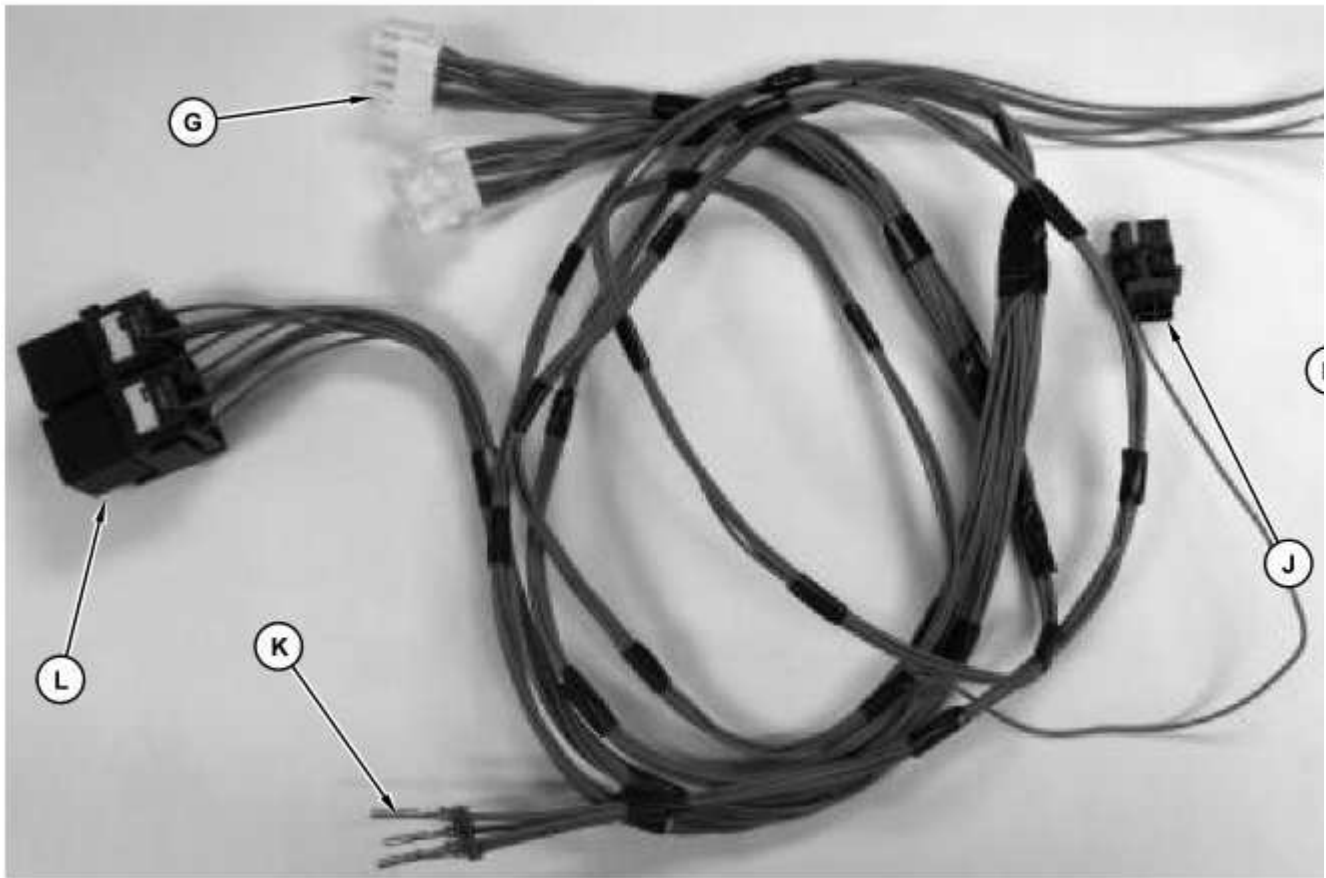


Illustration 16

g03.

- (G) Wiper connection
- (H) MSM wipers
- (J) Differential lock connection - not used
- (K) Pass through wires
- (L) Relays

Start by reviewing the harness.



Illustration 17

g03414743

Locate the relays onto the passengers side instrument panel lower support, using self tapping screw.



Illustration 18

g03.

(AA) Route of pass through wires and MSM wires

Route harness wiper connections through the lower section of center console to driver side. Route over steering column to left side of column.

Route the pass through wires (AA) and MSM wires to right side over air duct under fuse panel.

CAT Intermittent Wiper Installation Instructions

Table 2

REF #6		
355-3404 CI		
CAV	CIR	B/O
1	PLUG	-
2	PLUG	-
3	PLUG	-
4	PLUG	-
5	PLUG	-
6	PLUG	-
7	PLUG	-
8	PLUG	-
9	PLUG	-
10	PLUG	-
11	PLUG	-
12	49C	E

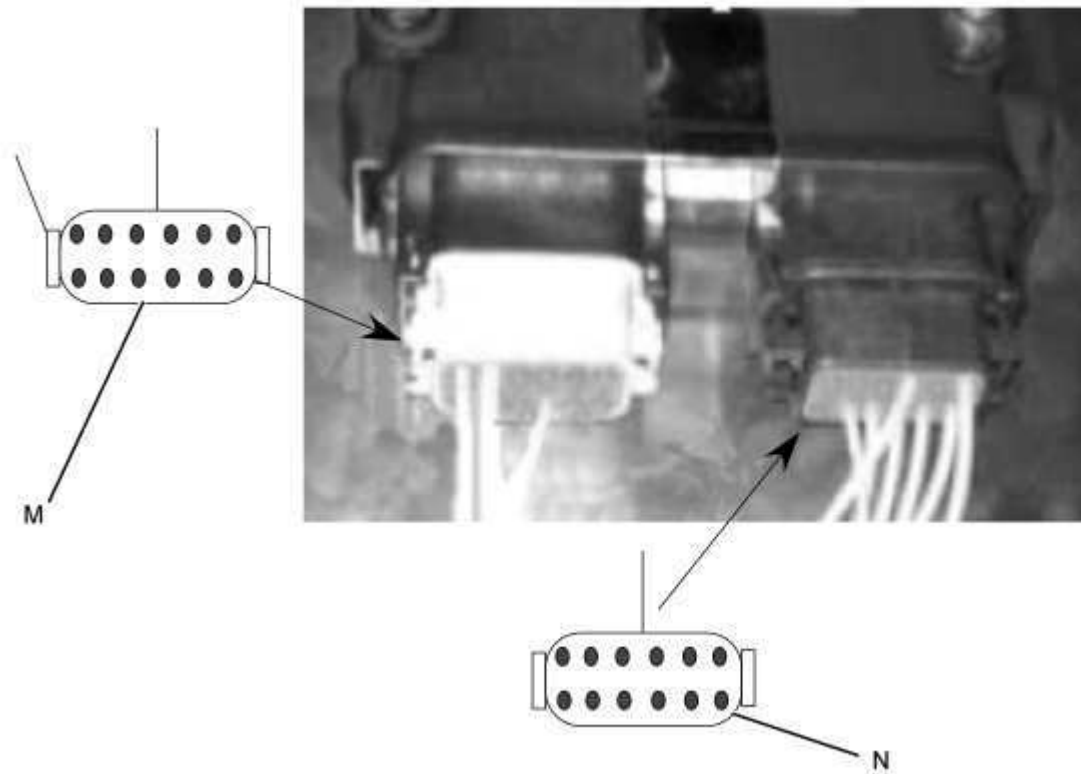


Illustration 19

g03

(M) MSM 1 connector (gray connector REF # 6)

(N) MSM 2 connector (black connector REF # 5)

Table 3

REF #5		
358-6750 C1		
CAV	CIR	B/O
1	PLUG	-
2	PLUG	-
3	PLUG	-
4	PLUG	-
5	PLUG	-
6	82Y	B
7	82Z	B

8	82-0	
9	82-1	
10	82-2	
11	87B	
12	PLUG	-

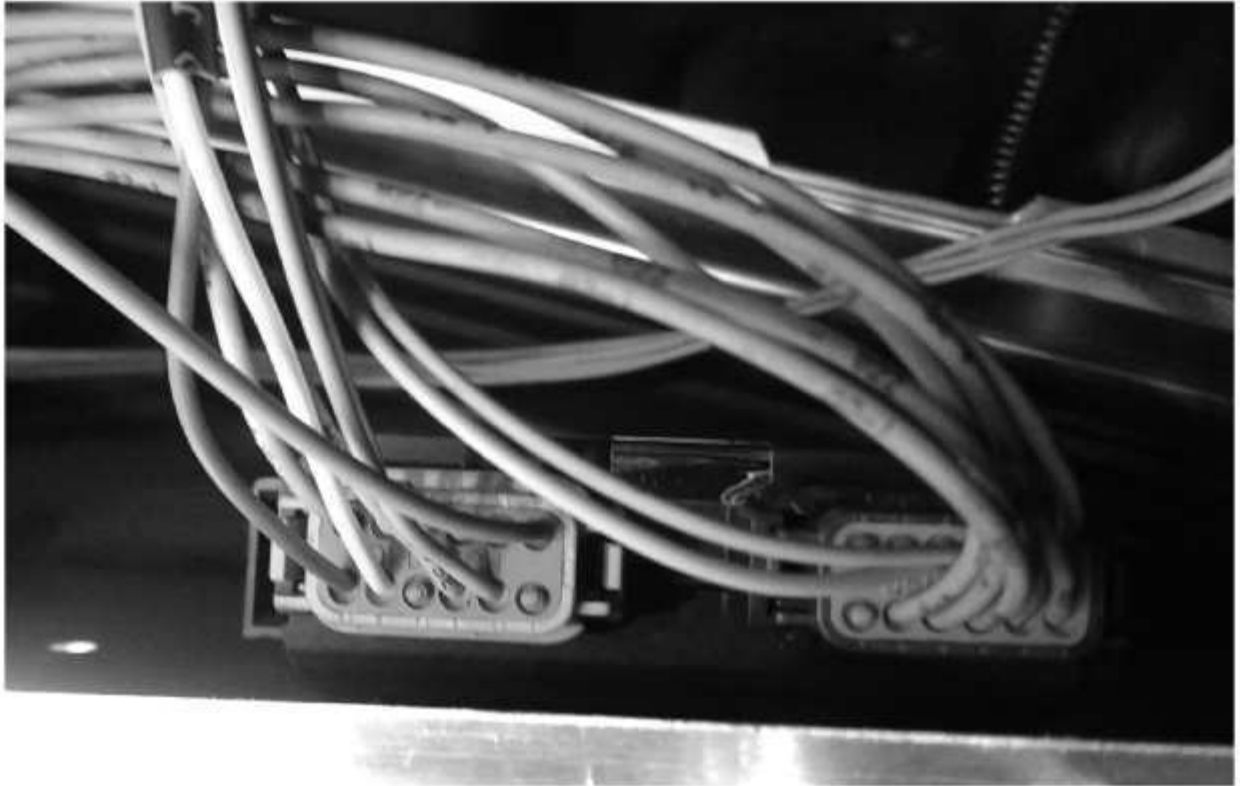


Illustration 20

g03

Install MSM wires into black and white connector on original harness. Do not remove any of the existing wires. Only one wire will be located in gray MSM #1 connector (M).

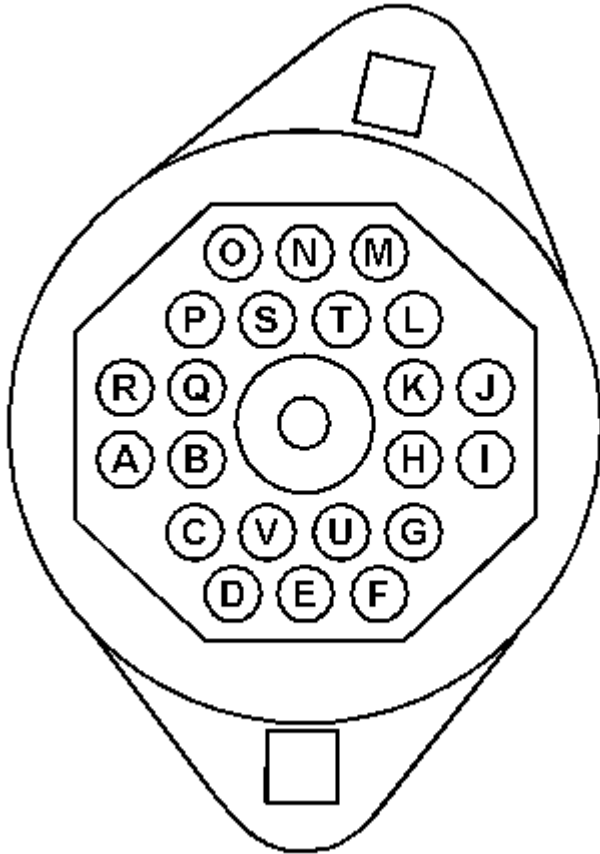


Illustration 21

g03583768



Illustration 22

g03414990

Table 4

REF #24		
359-3388 CI		
CAV	CIR	B/O
A	PLUG	-
B	PLUG	-
C	PLUG	-
D	PLUG	-
E	PLUG	-
F	PLUG	-
G	PLUG	-
H	PLUG	-
I	PLUG	-
J	PLUG	-
K	PLUG	-
L	PLUG	-
M	82C	B
N	82D	B
O	82E	B
P	PLUG	-
O	PLUG	-
R	PLUG	-
S	82F	B
T	PLUG	-
U	PLUG	-
V	PLUG	-

Install the pass through wires in the engine pass through connector. The connector is located upper right corner of cab behind the aluminum kick panel the MSM is mounted too. The engine connector is the upper most connector. Remove the wires in cavities M, N, O, & S. Tape terminals off and tape back onto main harness

Installation of Intermittent switch

Installation of the switch requires lowering the steering column but not removing the steering column. There is no need to remove steering wheel.



Illustration 23

g03416202

The center trim panels snap together. Carefully pull the pieces apart. If, unit has trailer brake level there are three screws in the panels.

Removing Steering Column

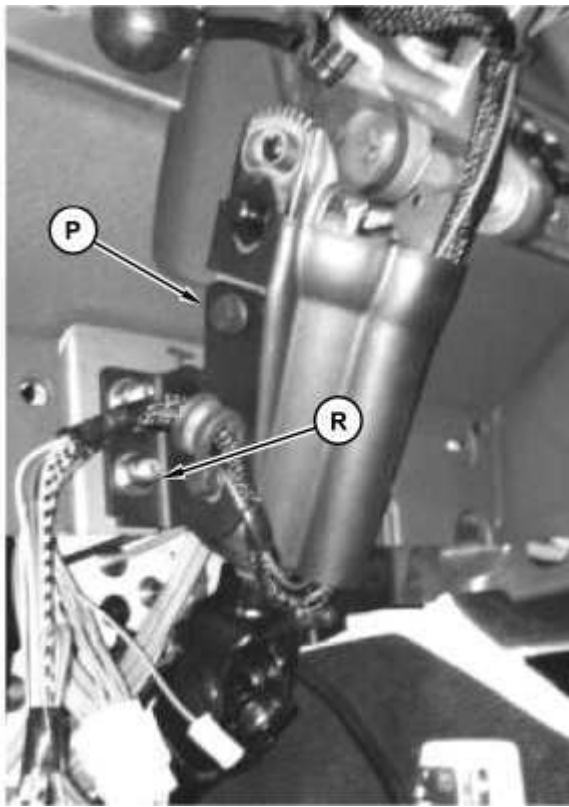


Illustration 24

g03416209

(P) Bolts

(R) Nuts

Remove the four bolts (P) holding the column to the column bracket. Note routing of harness through clip. Loosen two of the nuts (R) holding the column bracket to allow column to pull out. Once column is unbolted and lowered down on the seat, slide the black plastic wire cover down the column. This action will allow the wiper harness connector to pass through.

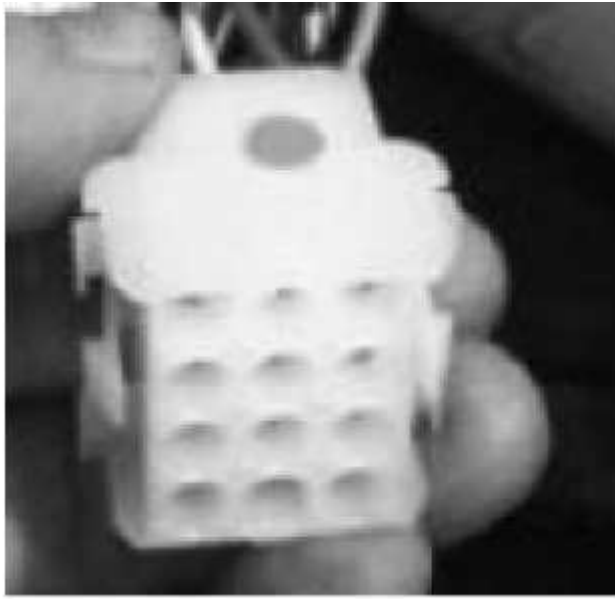


Illustration 25

g03416206

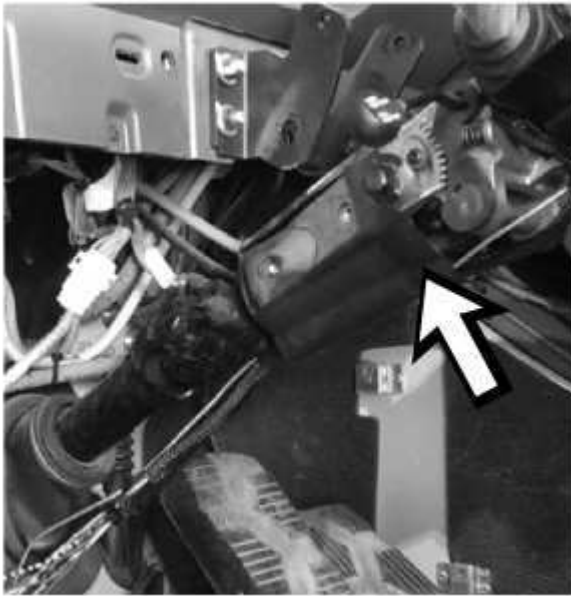


Illustration 26

g03416219

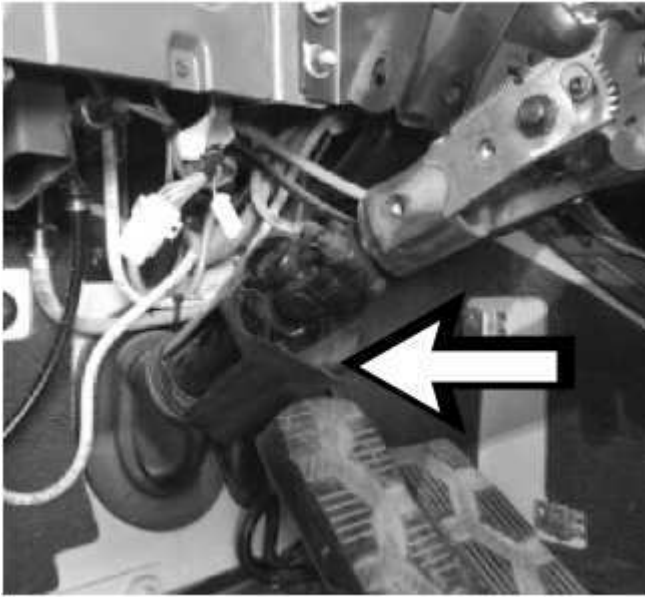


Illustration 27

g03416232

Remove switch from column. Note holes that the switch is mounted too on column before removing. Note the routing of the horn wire.

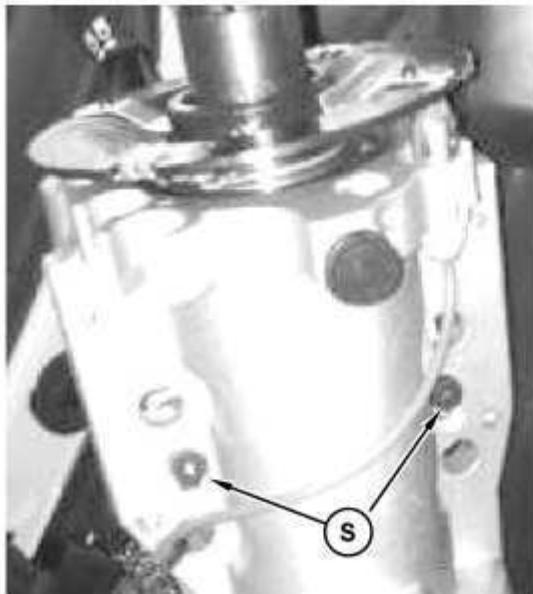


Illustration 28

g03416222

(S) Two position mount hole

Install new switch and reverse the process for reassembly. Fully test the unit prior to reassembly of the column to the dash.

Connect New Switch to harness

The switch will connect to the mating connector on the overlay harness. The overlay harness will connect to the original harness. This process will be the final connection.

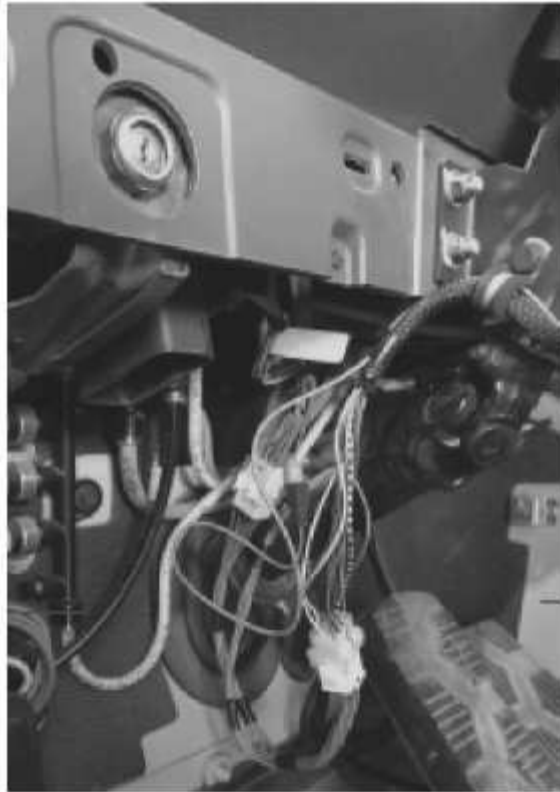


Illustration 29

g03416235

Test the new switch in all signal functions.

KEY OFF TEST

Key off test involves:

- Cycle switch through wiper states with the wiper switch off, key on
- Switch "OFF" crank trunk with the wiper switch off, key off

KEY ON TEST

Key on test involves:

- Wiper functions
- Washer functions
- Turn signals
- High beam (Make sure that it does not actuate wipers)
- Test switch in multistate activations.
- Head lights "ON" activate switch states
- Turn signal "ON" activate switch states (Make sure that it does not actuate wipers)
- Wipers on request high beam
- Switch "OFF" crank trunk

Reference Electrical Schematics

Wiper Circuit OFF

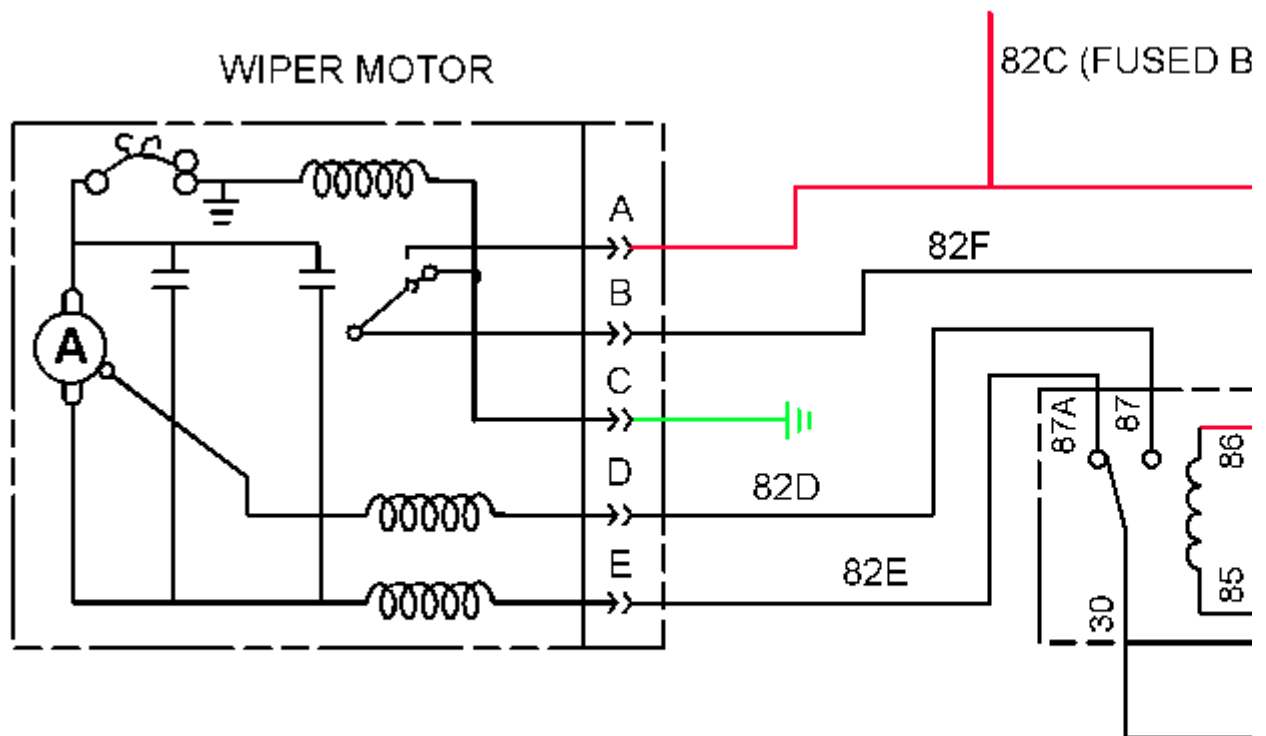


Illustration 30

Wiper circuit OFF

Wiper Circuit LOW Speed

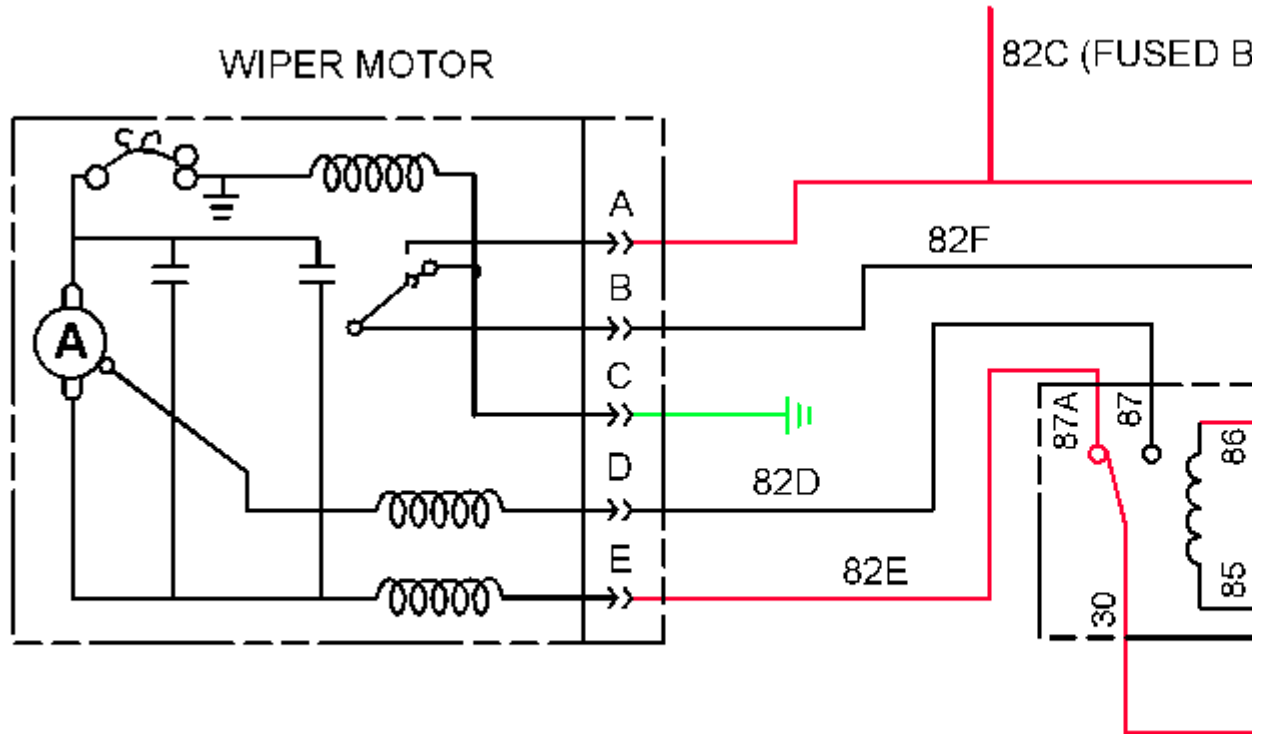


Illustration 31

Wiper circuit LOW speed

Wiper Circuit HI Speed

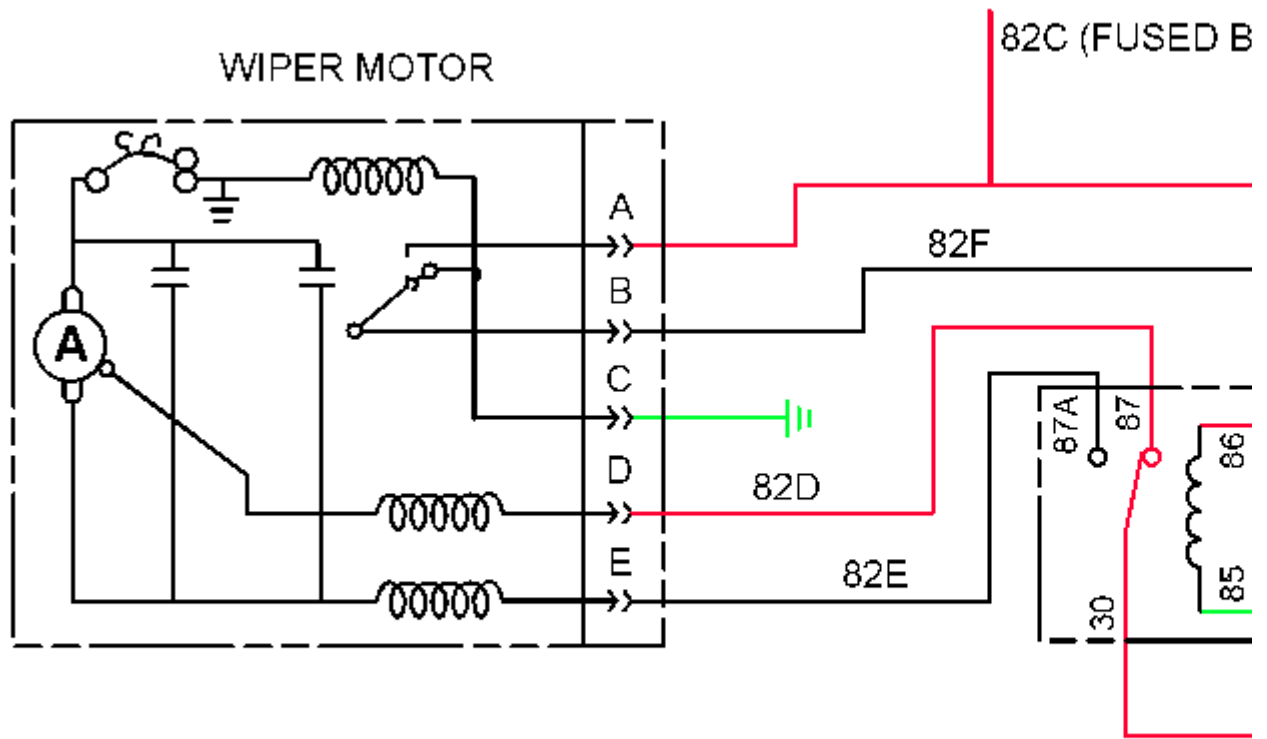


Illustration 32

Wiper circuit HI speed

Wiper Circuit PARK

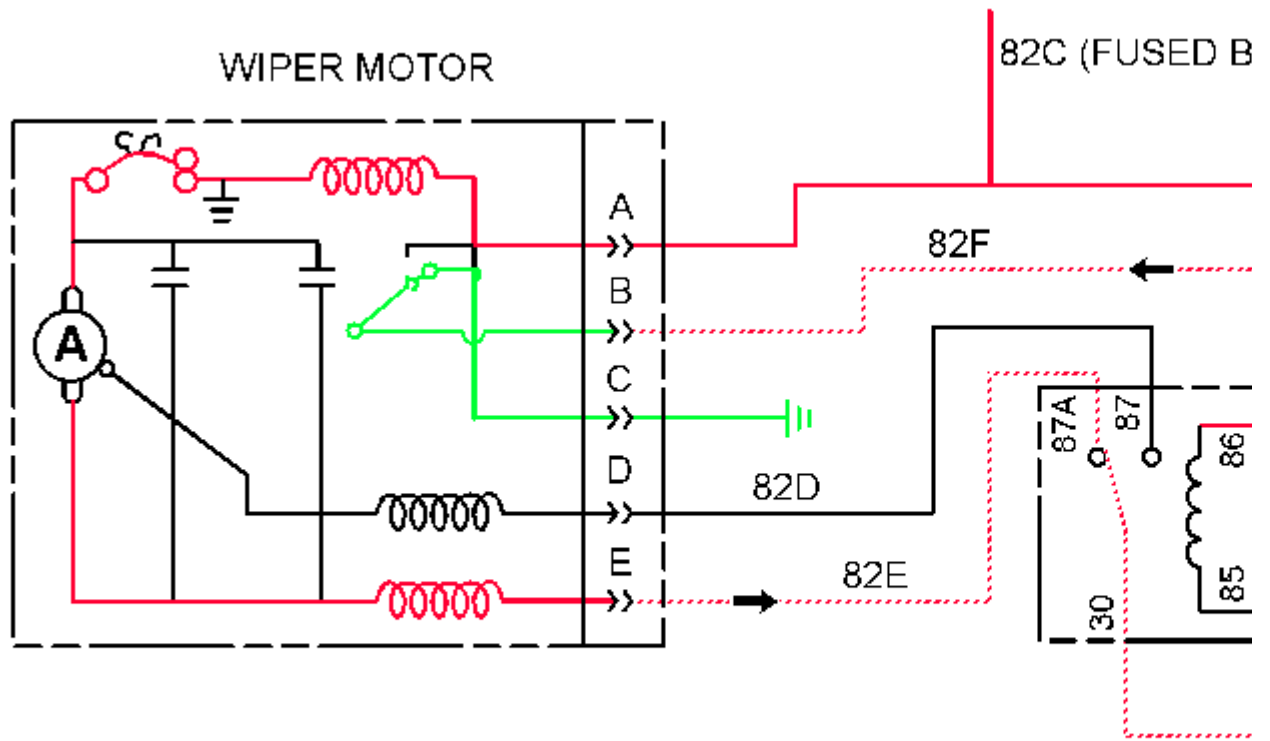


Illustration 33

Wiper circuit PARK

Relay Pin Out

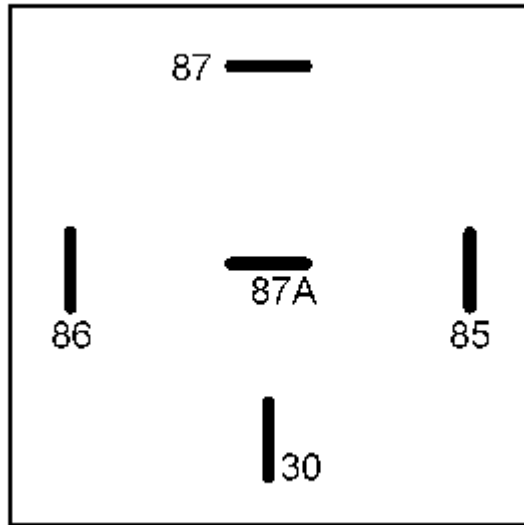


Illustration 34

g03642100

Relay label

Table 5

Terminal Number vs Relay Label	
Terminal Number	Relay Label
1	30
2	85
3	87A
4	87
5	86

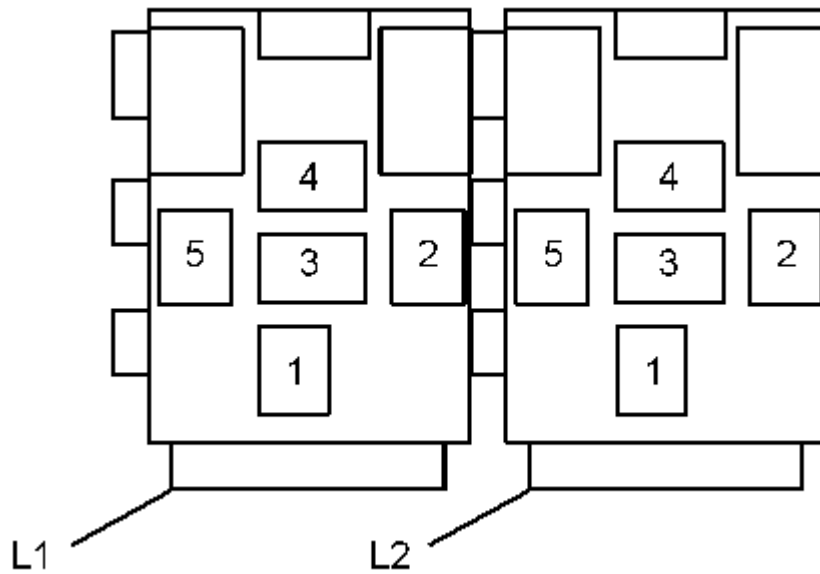


Illustration 35

g03583688

Relay pin location - view from wire end

(L1) High speed wiper relay

(L2) Low speed wiper relay

Table 6

Relay Pin Out		
Pin	High Speed Relay (L1)	Low Speed Relay (L2)
1	82X	82X
2	82Z "MSM Grnd"	82Y "MSM Grnd"
3	82E "low"	82F "Park"
4	82D "Hi"	82C / 82CD "B+"
5	82CA "B+"	82CB "B+"

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