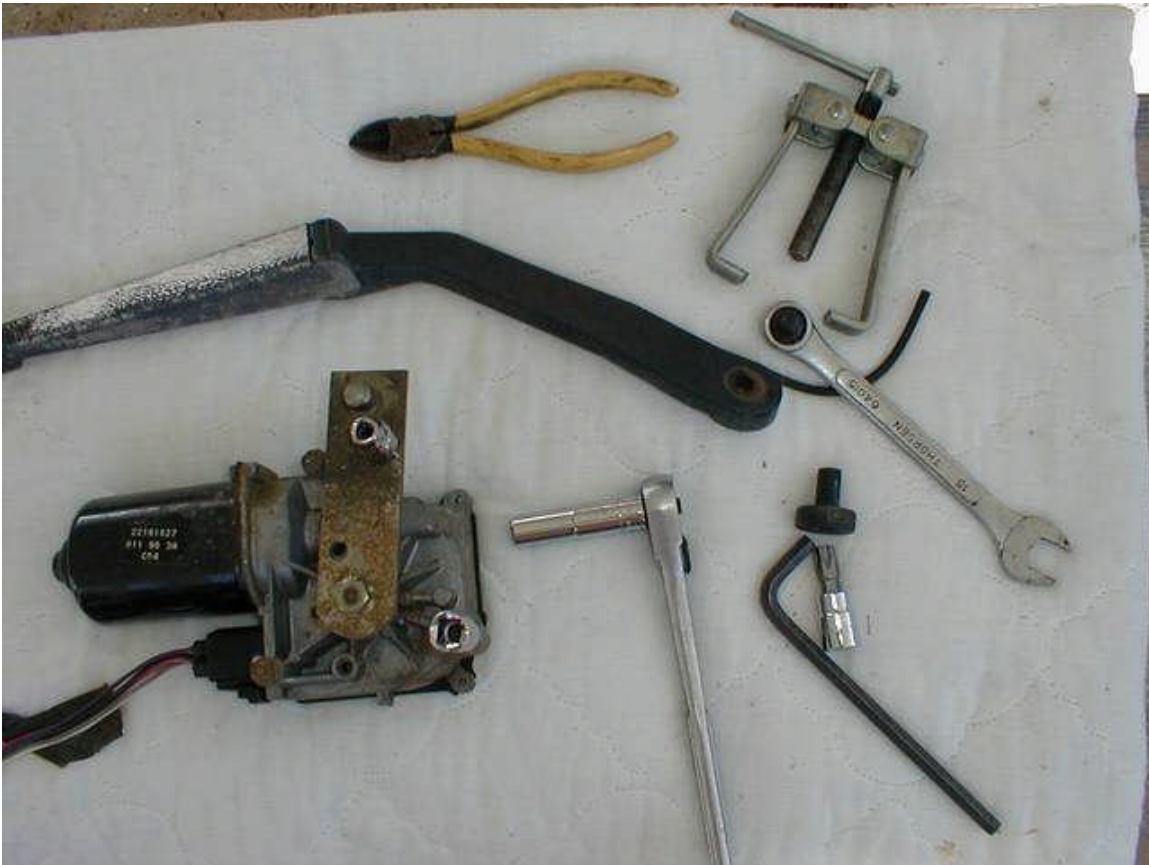


'90-'96 Lumina APV/Silhouette/TranSport Wiper Arm and Motor Removal

These wiper motors are strong enough to swing the long GMC motor home arms and blades – or their own adapted to GMCs. They also come with an internal control circuit for pulse (intermittent) operation. Here are the instructions for removing them.



The motor, arm, and the tools necessary to remove them

If you just want the 2 left wiper arms for your coach, you might as well go ahead and get the motors from both vehicles; you can sell or barter them to someone who wants to do the electric motor conversion.

1. On each wiper arm, pry off the plastic decorative cap over the retaining nut and remove the nut with a 15 mm wrench.
2. Remove the washer hoses where they attach to the fitting on the cowling.

3. Remove the arms with a small gear puller – or (not recommended) a large screwdriver under the arm and a hammer on the exposed stud – all the surrounding structure is plastic and offers no purchase. Save the left arm and leave the right one.

4. Raise the hood and remove the air cleaner from the engine. You'll have to remove its top cover, then take out the retaining stud before you can get the lower housing out.

5. Don't fail to get the electrical connector for the motor; a new one costs \$25+. Trace the wire from the motor, under the passenger side cowl, down toward the center of the firewall, and possibly over to the driver's side, as far as you can, then cut it. Pull the wires free of any retaining clips until it hangs free beneath the motor.

6. Examine the motor's mounting and remove the three mounting screws with a 10 mm wrench. On some vehicles, there is a slot in the mounting bracket that will allow the motor to be slid sideways and removed. On others, one must remove the entire wiper system from the body. If the motor will come out without removing everything, skip to step 11, following. Keep the 3 each 6 X 1.0 mm screws

7. The wiper system is held in place by a large knurled nut just outboard of each of the wiper arm shafts and by 3 each 11 mm nuts on studs. The knurled nuts will have to be broken loose with either a #55 torx driver or a 5/16 Allen wrench.

8. Two of the 11 mm nuts are located in the center of the cowl above the engine fore and aft of the tubular frame. Most of those I've removed have not had the rear nut installed.

9. The 3rd 11 mm nut is on the passenger side aft of the wiper motor.

10. With those 5 retainers removed, the entire tubular frame will come out – somehow.

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11. It is not necessary, or recommended, to remove the arm from the wiper motor at this time. If you do, keep the nut!

12. The wiper linkage must be released from the ball joint on the wiper motor arm with a 7 mm socket.

The motor connector will have five wires coming from it. Dependent upon the year of the vehicle the colors may be one of the following combinations:

		LATCH			
Washer Pump	(A)		(C)		At left are the pin labels for the connector, looking into the wire side. Use those labels to determine the correct wire connection
Ground					
Power (+12 VDC)		(B)			
High Speed					
Low Speed	(D)		(E)		
Wire connection					

Color Codes

Following are the known wire colors found on the Lumina APV-type connectors.

Kit Color	Pin	90-95 Lumina	96 Lumina	Unknown	Unknown
Not used	A	Red	Pink	Green	Orange
Ground Note: The following instructions assume the use of one of the Lumina APV motor connectors.					
	B	Black	Black	Black	Black
White	C	Yellow	White	Yellow	White
Violet	D	Pink	Violet	Violet	Blue
Gray	E	Green	Gray	Gray	Gray

(Note: The GM "violet" could be considered "purple")

Substitute your wire colors for the codes (X) in the following instructions.

13. To test the motor, strip about ½” of insulation from the ends of the (B), (C), (D), and (E) wires. Twist the (C) (always hot) and (E)(low speed) wires together.

Holding the motor clear of the rotating arm, connect the Black (B) (ground) wire to (-) and the (C)&(E) pair to +12VDC,. It should run in low speed.

Now add the (D)(high speed) wire to the (C)&(E) pair. NEVER connect the (D) to power without the (E)! The motor should run at high speed.

If you want to test the pulse circuit, connect Black(B)(-) and (C)(+12VDC), then place 30k - 300k Ohms between (E)(low speed) and (C)+12VDC; the larger the resistance, the longer the sweep delay.

14. The going price for a functional motor is about \$20-\$25. A new one is \$90 to \$180; a rebuilt one about \$70 + \$10 core. If the pulse board is bad, it's about \$28 for a rebuilt replacement board.

NOTE: The most common failure of these motors is very easily repaired:

Remove the black plastic cover over the printed circuit board. With a small screwdriver, pry gently all around the board until it is unplugged from its connectors and can be removed. With a hot soldering iron, re-melt the solder at each of the five (5) solder joints attaching the external connector to the printed circuit board. That will repair most problems. Clean the spring loaded contacts, reassemble the motor, and test as described above.