Service Bulletin

Bulletin No. 2009–71R1R1
CMD 2009-11R1

Circulate to: ☐ Sales Manager ☐ Accounting ☑ Service Manager ☑ Technician ☑ Parts Manager

Installation of the High-Pressure Filter Kit on Diesel Axius Models

Models Affected

All Cummins MerCruiser Diesel Axius–equipped models.

Situation

Cummins MerCruiser Diesel (CMD) has received reports that some Axius-equipped QSD 4.2L and QSD 2.8L engines have experienced power steering actuator failure due to debris contamination.

Perform the procedures described in the following QSD Axius service bulletins during the same service visit if they have not already been completed:

Service Bulletin Description	Service Bulletin Number
VesselView Restarts During Normal Operation of Diesel Axius Models	CMD 2009-07
Leaks from Low-Pressure Steering Hoses on Diesel Axius Models	CMD 2009-12

Solution

New CMD engines equipped with the Axius system will now include a remote mounted high-pressure hydraulic fluid filter.

Axius engines not currently equipped with a high-pressure filter must have one installed on the high-pressure side of the Axius hydraulic system between the pump and the steering actuator.

Filter kit part number 8M8025337 will be available to retrofit engines without the high-pressure filter. Use the following instructions to install these kits.

Parts Information

This kit contains parts to install high-pressure filters on both engines.

NOTE: *Order only one kit part number 8M8025337 per vessel.*

Qty.	Description	Part Number
2	High-pressure hydraulic hose 0.9 m (35 in.)	8M2016268
4	Straight fitting for filter inlet and outlet	8M2015982
2	High-pressure filter mounting bracket	8M2016251
2	High-pressure filter	8M2016867
6	Screw, (0.250–20 × 4.250)	844886
6	Lock washer, (0.250) stainless steel	26992
6	Washer, (.281 × .500 × .060) stainless steel	29245
6	Hardware to mount the high-pressure filter bracket	Obtain locally
AN	Dexron III Automatic Transmission Fluid	Obtain locally

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Installation

IMPORTANT: Do not remove the shipping caps from hydraulic hose fittings or filter inlet and outlet fittings until the filter is mounted and the hoses are routed. For initial engine installations, do not remove the hydraulic hose shipping connector until ready to connect the hydraulic hose fittings to the steering actuator hydraulic block. If removing any hydraulic component for service, immediately cap all open hydraulic hose fittings and component inlet and outlet fittings. Install the hydraulic hoses in one uninterrupted process. Do not leave the hydraulic system open longer than required to complete the installation.

IMPORTANT: Overtightening the hydraulic hose fittings can damage the fitting threads, O-ring, or sealing surface. Do not exceed torque specifications for the hydraulic hose fittings. To ensure proper torque, use an extension and crowfoot to apply torque at 90°.

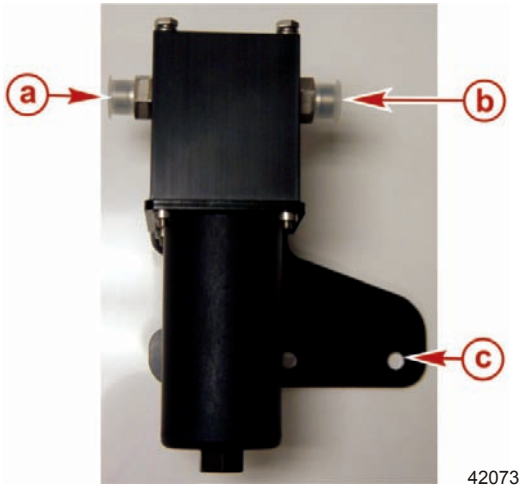
Recommendations for routing the hydraulic hoses and locating the filter:

- Hydraulic hoses must be free of twists or stress.
- Avoid contact with sharp edges and hot exhaust components.
- Mount the filter on a stringer, internal bulkhead, or floor.
- Install the filter in an area where it will not be exposed to bilge water.

IMPORTANT: When disconnecting hydraulic hoses that contain hydraulic fluid, the hose must be held above the engine until it is reconnected to minimize the loss of hydraulic fluid.

1. Find a suitable location to mount the filter bracket in the engine room, typically on a stringer at midpoint between the Axius hydraulic pump and the steering actuator on the starboard side of the engine.

   IMPORTANT: The filter inlet and outlet hydraulic hoses are 0.9 m (35 in.) in length. The steering actuator must be free to move back and forth. Hydraulic hose routing must not restrict steering actuator movement.



42073

a - Outlet fitting
b - Inlet fitting
c - Bracket mounting screw location (3)

2. Using the provided hoses as guides, find a location on a stringer to mount the filter that allows both hoses to reach the filter and their respective mounting points.
3. Mount the filter bracket using appropriate hardware. Fasteners (cap screws or bolts) should be no larger than 10 mm (3/8 in.) diameter. A total of 3 installer supplied fasteners will be required per filter kit.

Qty.	Description	Part Number
3	10 mm (3/8 in.) cap screw or bolt	Obtain locally

4. Install the screws, lock washers, and washers that secure the filter to the bracket assembly and tighten to specification.

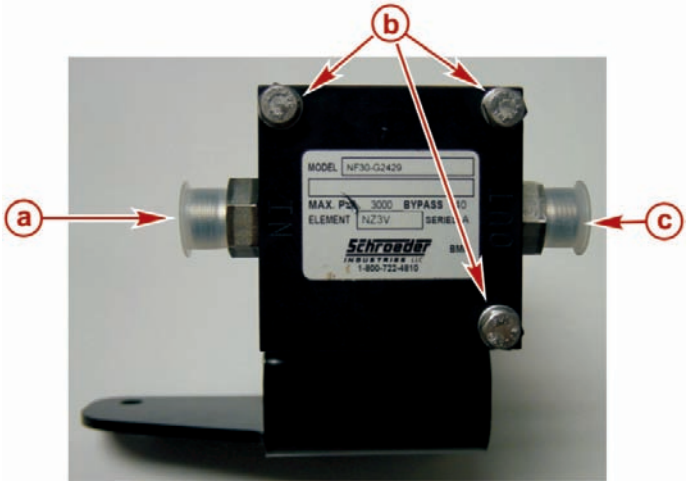
Qty.	Description	Part Number
3	Screw, (0.250–20 × 4.250)	844886
3	Lock washer, (0.250) stainless steel	26992
3	Washer, (.281× .500 × .060) stainless steel	29245

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Description	Nm	lb-in.	lb-ft
Screw, (0.250–20 × 4.250)	12	106	–



a - Inlet fitting
b - Cap screws (3)
c - Outlet fitting

42074

5. Install and tighten both the inlet and outlet hydraulic fittings to specification.

Description	Nm	lb-in.	lb-ft
Straight fitting	36	–	27

IMPORTANT: Using a lint-free clean cloth, wipe clean the steering actuator hydraulic block, high-pressure filter, hose fittings, and shipping caps before removing or installing these components.

6. Lubricate the threads of the hydraulic hose fittings and their O-rings with a clean lubricant. Remove the shipping cap and connect the new hydraulic hose to the outlet side of the filter assembly.

Tube Ref No.	Description	Where Used	Part No.
28	Dexron III Automatic	Threads of the hydraulic hose fittings and their O-rings	Obtain Locally

IMPORTANT: Do not remove the shipping cap on the other end of the hose at this time.

7. Tighten the hydraulic hose fitting to specification.

Description	Nm	lb-in.	lb-ft
Hydraulic hose fitting	54	–	40

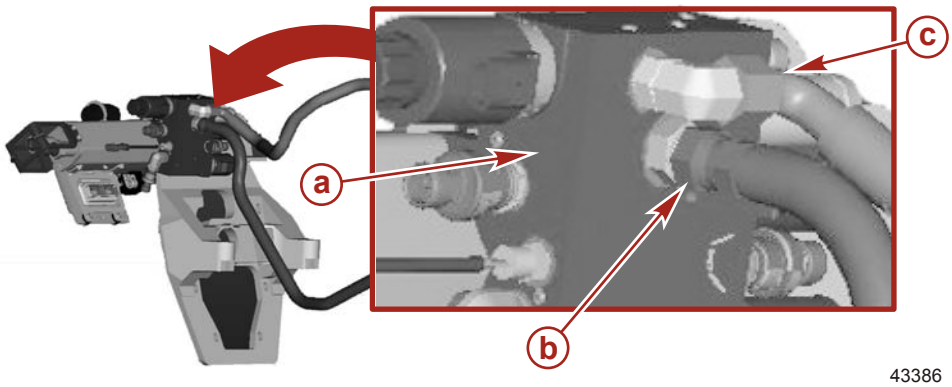
8. Route the other end of the hydraulic hose to the steering actuator, making sure to leave the shipping cap in place on the new hose.
9. Disconnect the high-pressure supply hose from the steering actuator hydraulic block and immediately connect it to the inlet fitting of the filter. Tighten the hydraulic hose fitting to specification.

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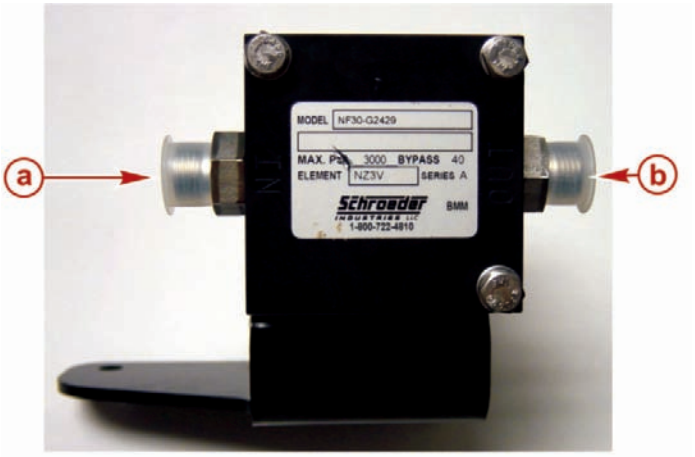
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Description	Nm	lb-in.	lb-ft
Hydraulic hose fitting	54	–	40



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a - Hydraulic block
b - High-pressure supply line (straight fitting)
c - Low-pressure return line (90° fitting)

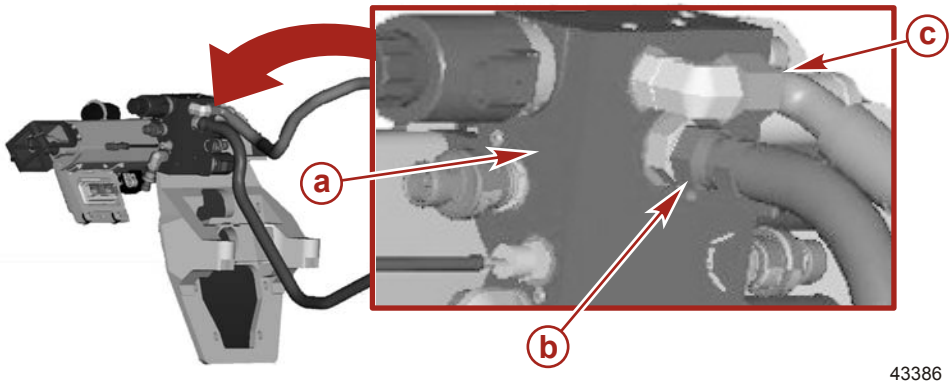


42076

a - Inlet fitting
b - Outlet fitting

10. Remove the remaining shipping cap from the hydraulic hose routed in step 8 and connect it to the steering actuator high-pressure supply connection. Tighten the hydraulic hose fitting to specification.

Description	Nm	lb–in.	lb–ft
Hydraulic hose fitting	54	–	40



43386

a - Hydraulic block
b - High-pressure supply line (straight fitting)
c - Low-pressure return line (90° fitting)

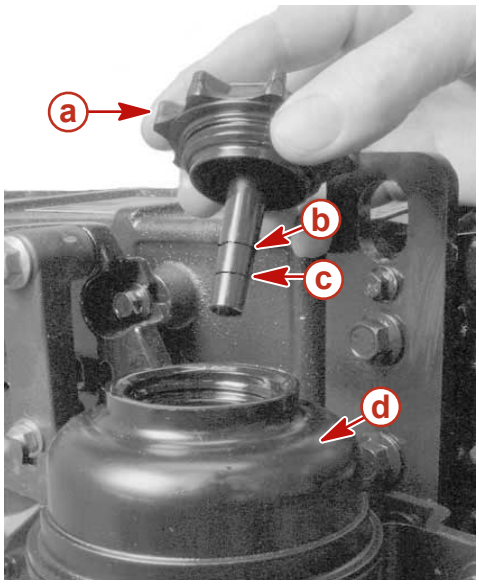
11. Secure the high-pressure filter assembly (if not previously mounted in step 2) to its final installation location and re-torque all hydraulic connections.
12. Add the specified fluid to the hydraulic steering reservoir if necessary to replace fluid lost during installation of the filter.

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Tube Ref No.	Description	Where Used	Part No.
28	Dexron III Automatic	Steering reservoir	Obtain Locally



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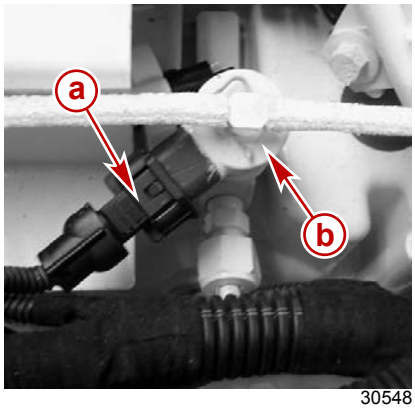
a - Fill cap and dipstick
b - Full hot mark
c - Full cold mark
d - Fluid reservoir

13. Perform the component removal and installation steps 1–12 on the second engine.
14. Complete the procedures outlined in service bulletin **CMD 2009-12 Leaks from Low-Pressure Steering Hoses on Diesel Axius Models** before refilling the hydraulic system.

NOTICE

Without sufficient cooling water, the engine, the water pump, and other components will overheat and suffer damage. Provide a sufficient supply of water to the water inlets during operation.

15. If the boat is out of the water, supply the engine and sterndrive with cooling water.
16. To crank the engine without starting, disconnect all the fuel injector connectors on the engine wiring harness from the injectors.



30548

a - Harness connector
b - Injector

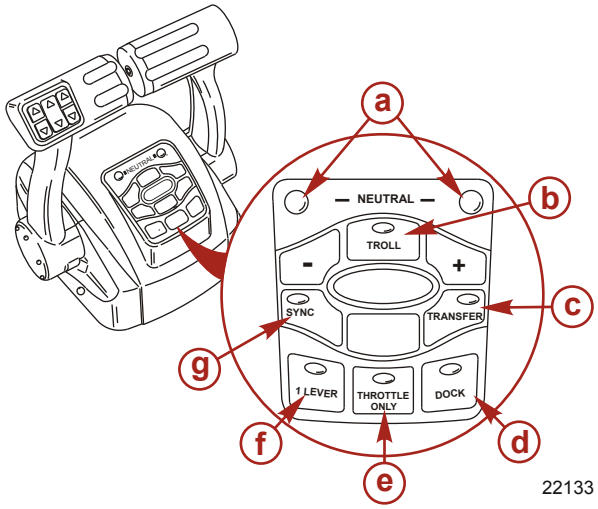
17. Crank the engine for 5–10 seconds. Check and top off hydraulic steering fluid level as necessary to obtain the correct level. Inspect all hydraulic hoses and connections for leaks at this time.
18. Reconnect all the fuel injector connectors and start the engine. Let the engine idle for 10 minutes. Do not move the helm or joystick at this time and do not exceed 10 minutes of idle time. Shut down the engine, recheck the fluid reservoir, and fill as needed.

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19. Start the engine again and activate the Throttle Only mode on the ERC pad. Use the joystick to control drive movement. Repeatedly cycle the joystick from port to starboard and back again five times to purge air from the steering actuator valves. Disengage Throttle Only mode.



Axius CAN trackpad

- **a -** "NEUTRAL" LEDs
- **b -** "TROLL" button
- **c -** "TRANSFER" button
- **d -** "DOCK" button
- **e -** "THROTTLE ONLY" button
- **f -** " 1 LEVER" button
- **g -** "SYNC" button

20. Repeatedly cycle the helm from port to starboard and back again ten times to purge air from the hydraulic system. Fill the power steering reservoir as needed. Inspect all hydraulic hoses and connections for leaks, and tighten as necessary.

Warranty

CMD will cover parts and labor costs associated with this filter installation within the normal terms and conditions of the engine's warranty. Submit a warranty claim through your normal warranty processing channel listing:

- Starboard engine serial number
- Port engine serial number
- Part Code 804
- Failure Code 11
- Flat Rate Code and labor time for the starboard engine: MS22 1.0, NJC 0.5 hours
- Flat Rate Code and labor time for the port engine: MS22 1.0, NJC 0.5 hours

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