

RECOMMENDATIONS FOR HOSE ROUTING

IMPORTANT: This document guides our dealers, boatbuilders, and company service personnel in the proper installation or service of our products. If you have not been trained in the recommended servicing or installation procedures for these or similar Mercury Marine products, have the work performed by an authorized Mercury Marine dealer technician. Improper installation or servicing of the Mercury product could result in damage to the product or personal injury to those installing or operating the product.

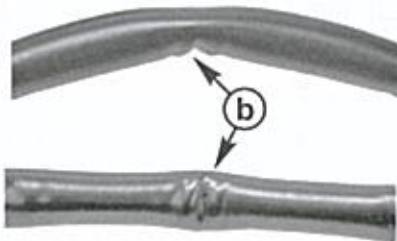
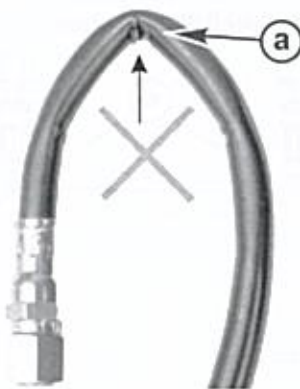
NOTE: After completing installation, place these instructions with the product for the owner's future use.

Hose Routing Requirements

Do's and Don'ts

1. Never step on or bend the hose in a way that could allow it to kink. If the hose should ever get kinked, replace the hose. Do not use a hose that has been kinked, the hose could fail under pressure. If the outer hose cover shows any signs of wrinkles, the hose was kinked at that location and the hose must be replaced.

IMPORTANT: If the hose should ever get kinked, the hose is damaged. The hose could fail under pressure and must be replaced.



Example of a kinked hose

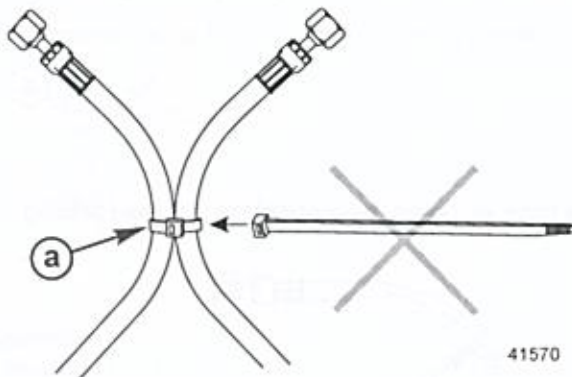
a - Kinked

b - Signs of a kinked hose - wrinkles

44287

2. The hose diameter must be free to flex and expand while under pressure. Do not fasten the hose with cable ties or any other tight-fitting clamp that could restrict hose flexing and expansion.

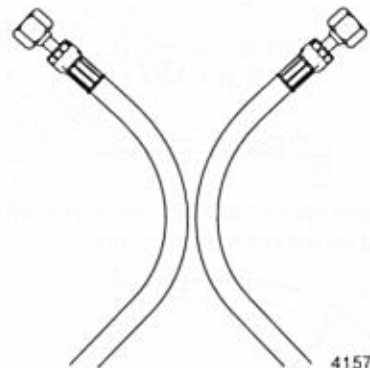
IMPORTANT: Damage to the hose could result if hose expansion is restricted during operation. Do not use cable ties or any other tight-fitting clamp to fasten the hose during rigging.



41570

Incorrect

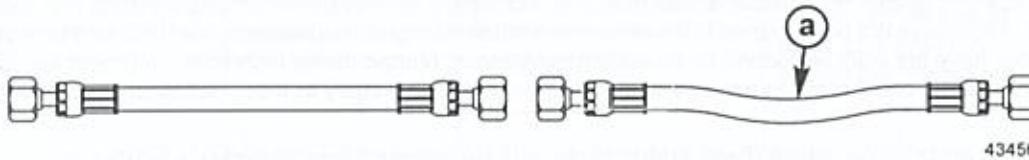
a - Cable tie - Do not use



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Correct

3. Select the length of the hose that will be close to the proper size. Allow an additional small amount of hose length for motion and tolerances.

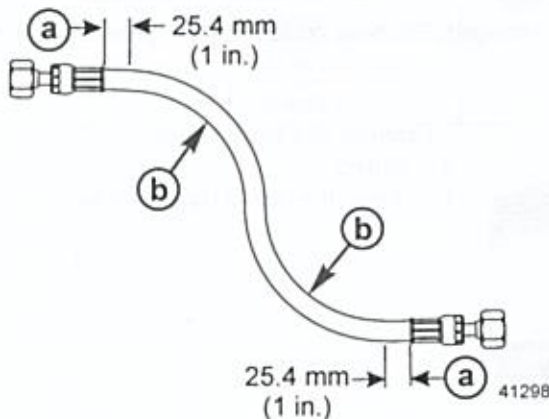


Incorrect

- a - Hose length allowance for movement

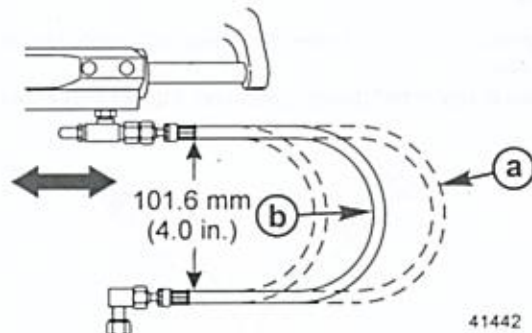
Correct

4. Handle the hose with care during installation. Kinking the hose or bending less than the 50.8 mm (2 in.) minimum bend radius may reduce hose life. Maintain a 25.4 mm (1 in.) straight section of hose out from the coupler prior to the beginning of the bend radius.



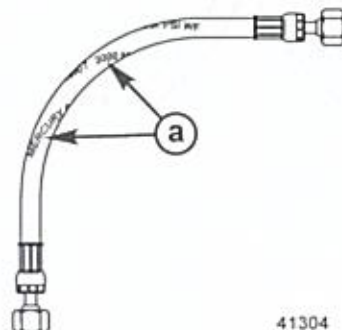
- a - Straight hose section of 25.4 mm (1 in.) prior to the beginning of the hose bend
b - Minimum hose bend radius of 50.8 mm (2 in.)

5. Provide adequate hose length to allow for motion during steering or trimming of outboards.



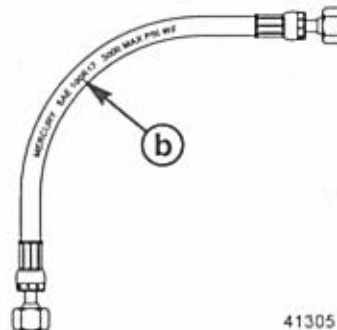
- a - Provide adequate hose length due to motion
b - Minimum hose bend radius of 50.8 mm (2 in.)

6. Pressure applied to a twisted hose may shorten the life of the hose, or loosen the connections. To avoid twisting, use the writing on the hose as a reference.



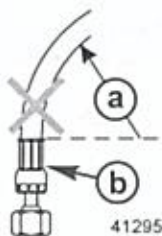
Incorrect

- a - Writing on hose is twisted
b - Writing on hose is straight



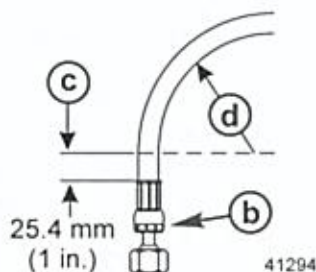
Correct

7. Maintain a 25.4 mm (1 in.) straight section of hose out of the coupler prior to the beginning of the hose bend radius.



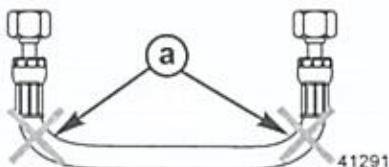
Incorrect

- a - Sharp bend out of coupler
- b - Coupler
- c - Straight hose section of 25.4 mm (1 in.) prior to the beginning of the hose bend radius
- d - Minimum hose bend radius of 50.8 mm (2 in.)



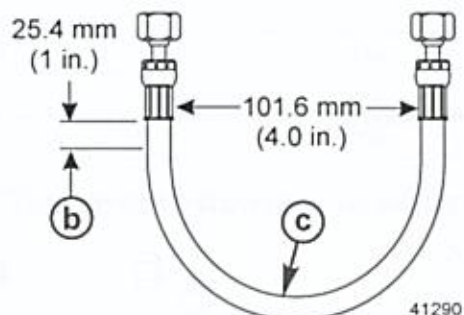
Correct

8. Provide adequate hose length to prevent any sharp bends in the hose. Maintain a 25.4 mm (1 in.) straight section of hose out of the coupler prior to the beginning of the hose bend radius.



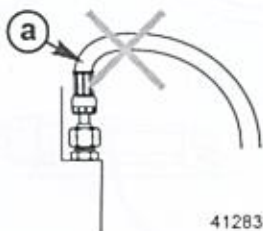
Incorrect

- a - No sharp bends
- b - Straight hose section of 25.4 mm (1 in.) prior to the beginning of the hose bend radius
- c - Minimum hose bend radius of 50.8 mm (2 in.)



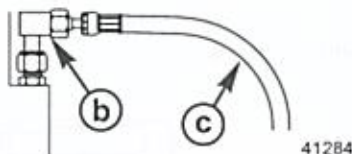
Correct

9. Example showing the use of a 90° fitting to prevent a sharp hose bend out of the coupler.



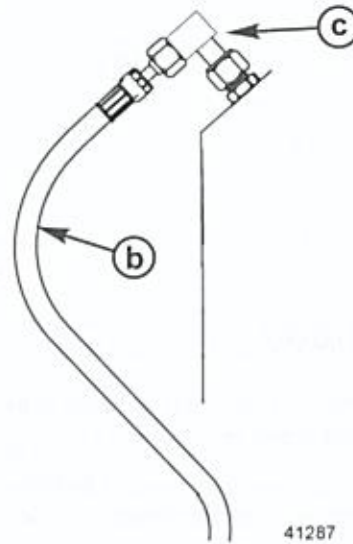
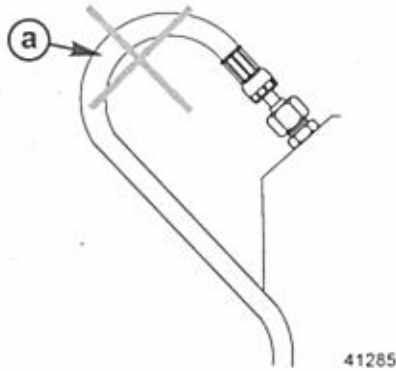
Incorrect

- a - No sharp bend
- b - 90° fitting (22-892528)
- c - Minimum hose bend radius of 50.8 mm (2 in.)



Correct

10. Example showing the use of a 90° fitting to prevent a sharp bend in the hose.

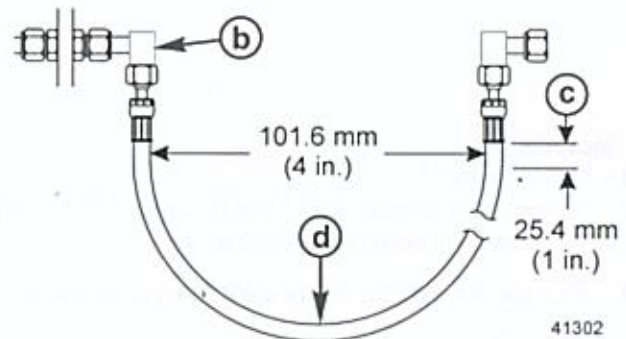
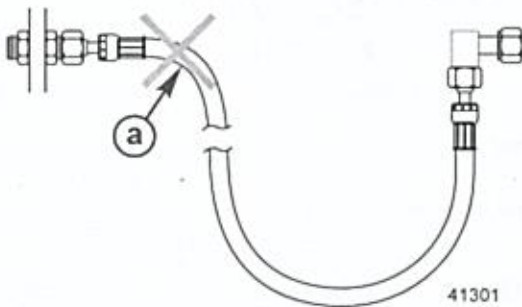


Incorrect

- a - No sharp bend
- b - Minimum hose bend radius of 50.8 mm (2 in.)
- c - 90° fitting (22-892528)

Correct

11. Example showing the use of a 90° fitting to relieve hose strain.



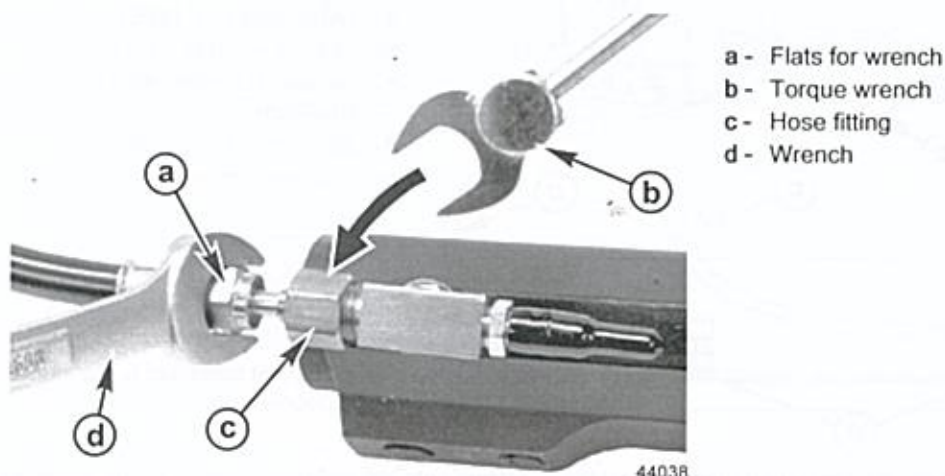
Incorrect

- a - No sharp bend
- b - 90° fitting (22-892528)
- c - Straight hose section of 25.4 mm (1 in.) prior to the beginning of the hose bend radius
- d - Minimum hose bend radius of 50.8 mm (2 in.)

Correct

Tightening the Hose Fittings

Place a wrench onto the flats on the hose fitting and hold the hose from turning while tightening the hose fitting. Tighten the hose fitting to the specified torque.



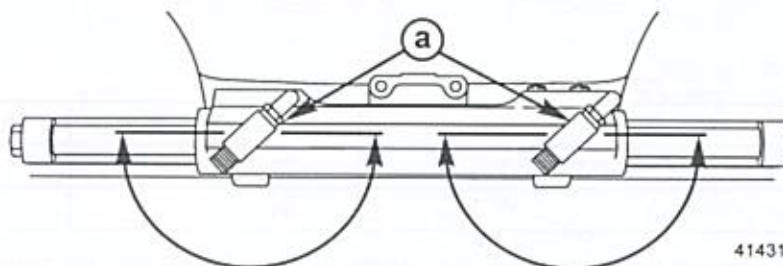
Description	Nm	lb-in.	lb-ft
Hoses marked (R-STAR and L-PORT) - wrench size 18 mm (11/16 in.)	24		17.5
Hoses marked (P and T) - wrench size 21 mm (13/16 in.)	54		40

Recommended Hose Routing to the Steering Cylinder - All Models except Verado Six Cylinder Models

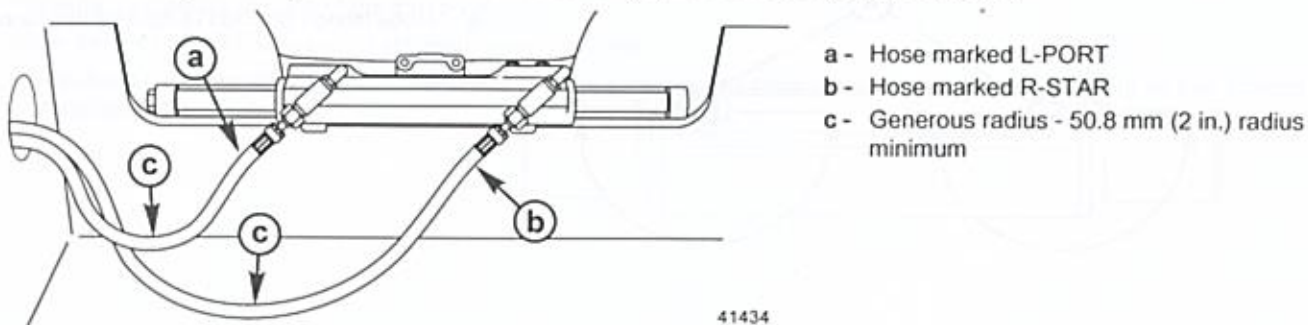
Tighten the hose hex fittings to the specified torque.

Description	Nm	lb-in.	lb-ft
Hoses marked (R-STAR and L-PORT) - wrench size 18 mm (11/16 in.)	24		17.5
Hoses marked (P and T) - wrench size 21 mm (13/16 in.)	54		40

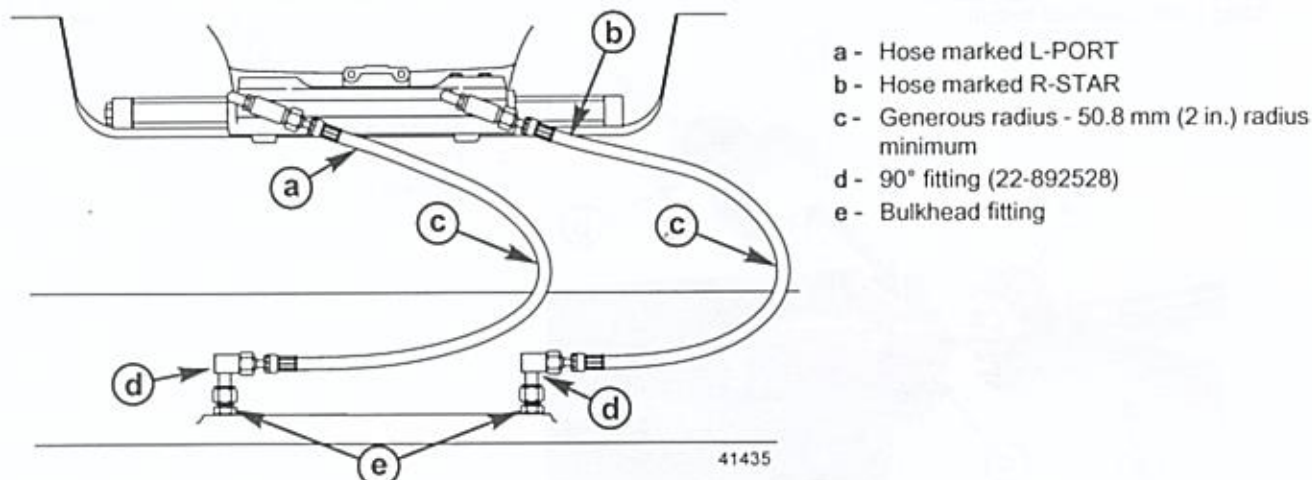
1. Position the 90° hose fittings to the desired direction. Loosen the fastening nuts in order to rotate. Tighten after the correct hose routing location is verified.



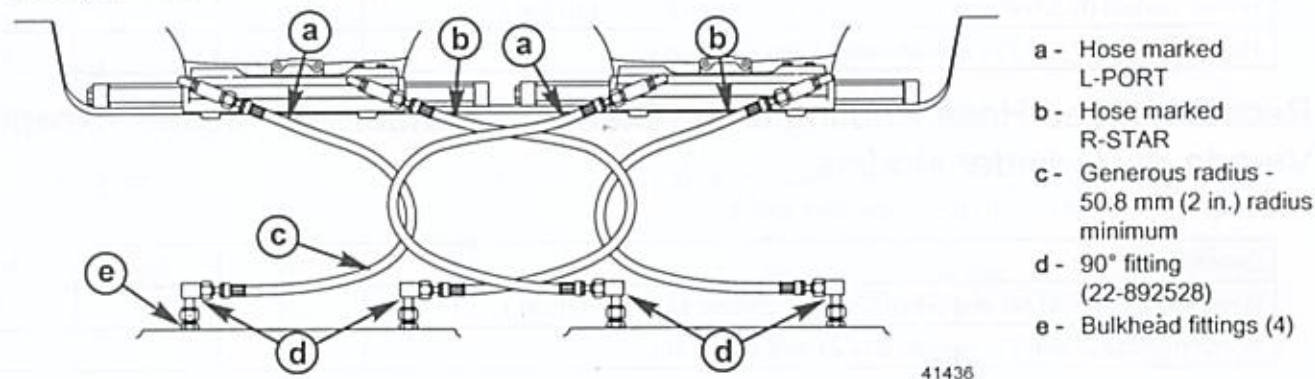
2. Boats with engine well opening - route the hydraulic hoses to the steering cylinder, as shown. Provide adequate hose length to allow for changes in length due to motion on the steering cylinder and tilting of the outboard.



- Boats using bulkhead fittings - single outboard models - install 90° fittings onto the bulkhead fittings. Route the hydraulic hoses to the steering cylinder as shown. Provide adequate hose length to allow for changes in length due to motion on the steering cylinder and tilting of the outboard.



- Boats using bulkhead fittings - dual outboard models - install 90° fittings onto the bulkhead fittings. Route the hydraulic hoses to the steering cylinders as shown. Provide adequate hose length to allow for changes in length due to motion on the steering cylinders and tilting of the outboards.

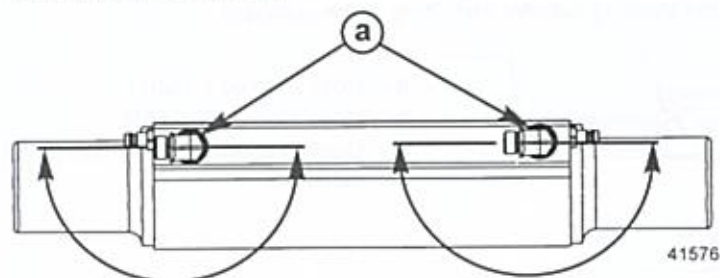


Recommended Hose Routing to the Steering Cylinder - Verado Six Cylinder Models

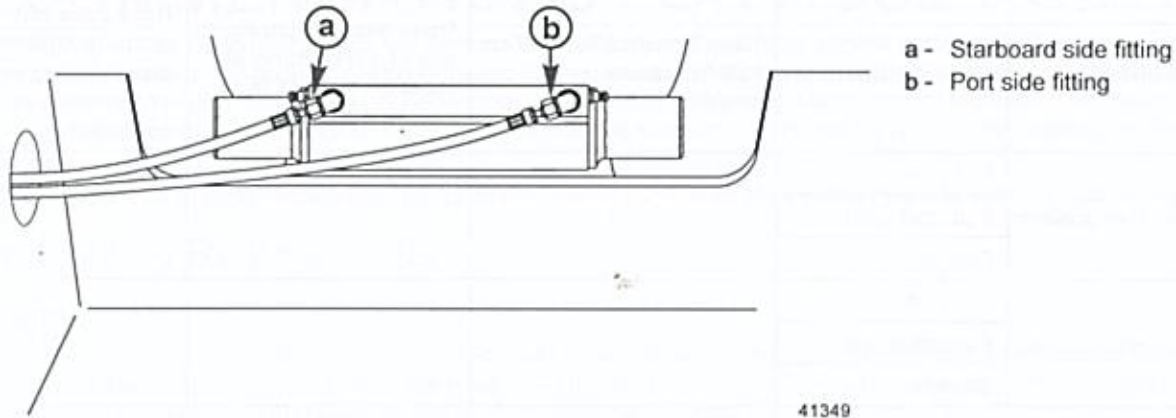
Tighten the hose hex fittings to the recommended torque.

Description	Nm	lb-in.	lb-ft
Hoses marked (R STAR and L PORT) - wrench size 18 mm (11/16 in.)	24		17.5
Hoses marked (P and T) - wrench size 21 mm (13/16 in.)	54		40

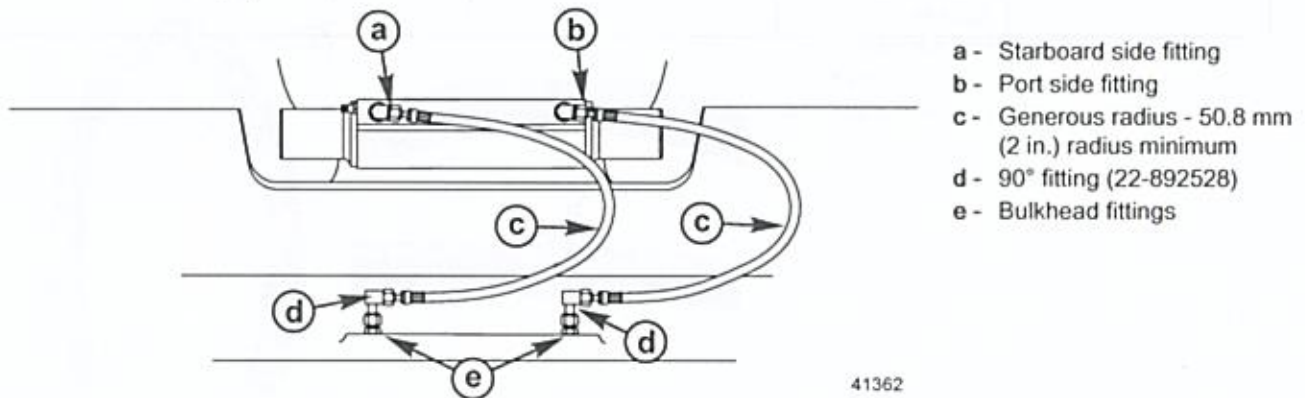
- Position the 90° hose fittings to the desired direction. Loosen fastening nuts in order to rotate. Tighten after the correct hose routing location is verified.



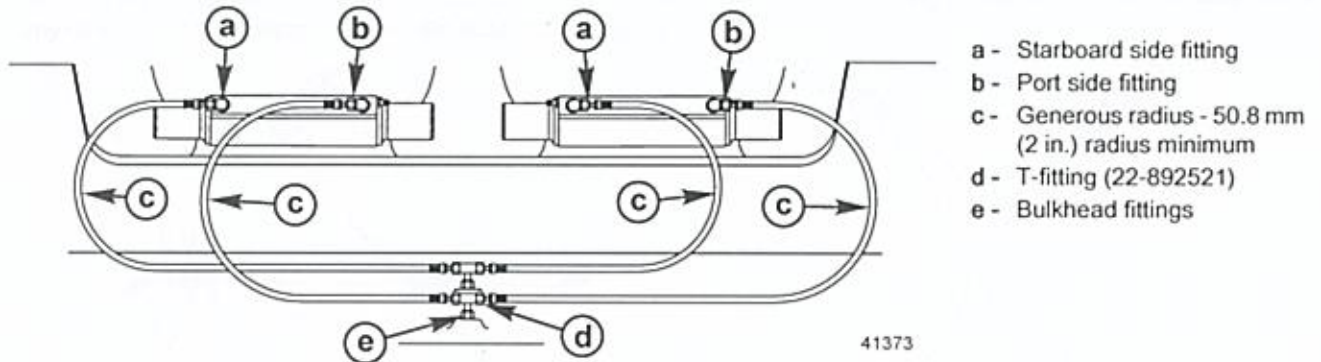
2. Boats with engine well opening - route the hydraulic hoses to the steering cylinder, as shown.



3. Boats using bulkhead fittings - single outboard models - install 90° fittings onto the bulkhead fittings. Route the hydraulic hoses to the steering cylinder, as shown.



4. Boats using bulkhead fittings - dual outboard models with dual steering cylinders - install T-fittings onto the bulkhead fittings. Route the hydraulic hoses to the steering cylinders, as shown.



Hose Routing Check List

1. Place the outboard into each of the trim positions.
2. Steer the outboard through the full steering range, as listed.
3. Check each hydraulic hose so that it meets the listed requirements. If necessary, change the hose routing so that it meets all requirements.

RECOMMENDATIONS FOR HOSE ROUTING

Hose Routing Check List				
Trim position	Steer outboard to:	Hose bends are 101.6 cm (4.0 in.) diameter or larger	Hose extends straight out of each fitting at least 25.4 cm (1 in.) before bending	Hoses are not rubbing against each other during steering or trimming of outboards
Full down trim position	Full port	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Full starboard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Straight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full up trim position	Full port	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Full starboard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Straight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Full tilt trailer position	Full port	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Full starboard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Straight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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