

**This bulletin supersedes all previous bulletins**

## Alternate Gear Ratio Sterndrive Units for High Altitude

### Models

All

### **⚠ CAUTION**

**Under no circumstances should a high elevation gear ratio be used on boats operating at elevations below those specified on the chart. Damage to the drive unit may result. Damage resulting from the use of the improper gear ratio will not be covered by the MerCruiser warranty.**

MerCruiser Alpha One and Bravo packages can be ordered from your boat manufacturer with alternate gear ratio for high elevation applications. The use of higher numeric gear ratio will help to compensate for the engine horsepower losses caused by the high elevations.

Any of your boats that will be operated exclusively in high elevation areas should be ordered with the appropriate alternate gear ratio sterndrive unit. The alternate drive unit gear ratios will allow better use of the propeller line for high elevation operation.

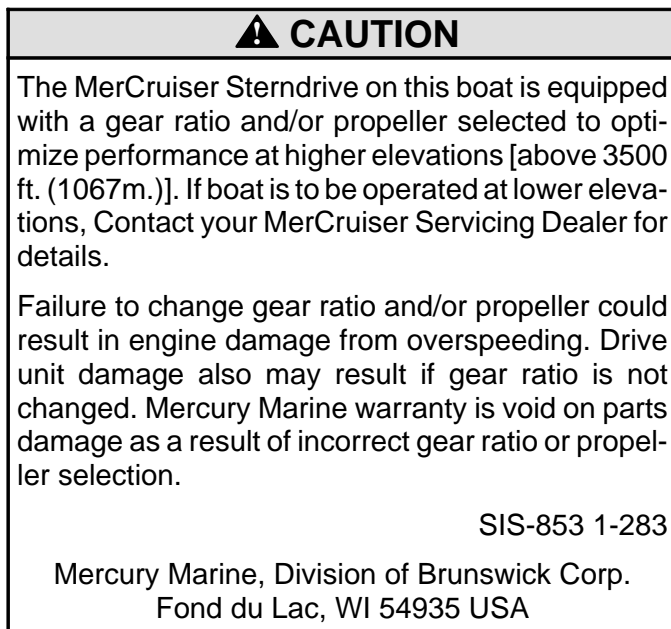
Mercury Marine has an exchange program to convert standard units to the alternate elevation gear ratios at the dealership. This program can only be used on new, non-operated units.

- a. **New, boxed 3.0LX - 350 Magnum MPI Alpha One and Bravo 4.3L - 502 Magnum MPI standard units:**
  1. Unit must be in original, sealed shipping carton. New unit installed on boat or unit out of its original shipping carton must use “b” instructions.
  2. Mark “**ALTERNATE DRIVE UNIT GEAR RATIO EXCHANGE PROGRAM**” on a completely filled out warranty claim. No labor or freight will be allowed on the exchange.
  3. Send the unit and warranty claim to your normal Warranty Processing Center. Your account will be credited at dealer price for the returned unit providing it is undamaged.
- b. **Unboxed new, non-operated 3.0LX - 350 Magnum MPI Alpha One and 4.3L - 502 Magnum MPI Bravo standard units:**
  1. Order appropriate gear set to change ratio to the ratio shown in the chart.
  2. Install elevation gear set in unit. Retain gear lube for reuse in the drive unit.
  3. Mark “**ALTERNATE DRIVE UNIT GEAR RATIO EXCHANGE PROGRAM**” on completely filled out Warranty Claim. Labor allowed for gear exchange is (2 hours) at your MerCruiser Labor Rate.
  4. Send old gears and warranty claim to your normal Warranty Processing Center. Your account will be credited at dealer price for the parts (no handling allowance) and (2 hours) labor at your MerCruiser Labor Rate. Gear lube can be reused in non-operated units so no allowance will be made for lube.

- c. When going to an alternate gear ratio for higher elevation **CAUTION DECAL**, SIS-853 (shown below)

**MUST BE** affixed to a visible location on the dashboard of the boat. This decal alerts the owner that the boat is equipped with an alternate gear ratio drive unit and that the gear ratio must be changed (at the owners expense) if the boat is to be operated at lower elevations. Order the SIS-853 Decal from:

Technical Services Department  
MerCruiser  
3003 N. Perkins Rd.  
Stillwater, OK 74075  
Telephone: (405) 743-6555  
FAX: (800) 245-8794



- d. The “**Alternate Drive Unit Gear Ratio Exchange Program**” applies only to gear ratio changes for higher elevation use.
- e. Gear set ordering information:
1. 4.3L/4.3LX - 350 Magnum MPI **Alpha One units** -- Gear ratio conversion can be accomplished by installing the appropriate set of drive shaft housing gears listed in the parts catalog.
  2. 4.3L - 502 Magnum MPI **Bravo units** -- For gear ratio conversion it may be necessary to change the drive shaft housing gear set and or the lower gear case housing gear set to accomplish the appropriate gear ratio.
  3. 3.0/3.0LX Models - Gear ratio is done in the lower gear case housing. Standard has 13/21 tooth gears, High Elevation Gear Kit has 14/28 tooth gears (see **NOTE 1** in chart).

<b>ALTERNATE ELEVATION GEAR RATIOS</b>				
<b>Alpha One Models</b>				
<b>Elevation</b>	<b>3500 - 5000 (Feet)</b>		<b>Above 5000 (Feet)</b>	
<b>Boat Length</b>	<b>Up to 19'</b>	<b>19' and Above</b>	<b>Up to 19'</b>	<b>19' and Above</b>
3.0L/3.0LX w/1.98:1	No Change	No Change	2.40:1 *	2.40:1 *
3.0LX w/1.94:1	No Change	No Change	2.40:1 *	2.40:1 *
			( Note 1 * )	( Note 1 * )
3.0L w/2.00:1	No Change	No Change	2.40:1	2.40:1
			( Note 2 * )	( Note 2 * )
<b>Boat Length</b>	<b>Up to 21'</b>	<b>21' and Above</b>	<b>Up to 21'</b>	<b>21' and Above</b>
4.3L w/1.84:1	No Change	No Change	1.98:1	1.98:1
4.3L w/1.81:1	No Change	No Change	1.94:1	1.94:1
4.3L w/1.81:1	No Change	No Change	2.00:1	2.00:1
4.3LX w/1.84:1	No Change	No Change	1.98:1	1.98:1
4.3LX w/1.81:1	No Change	No Change	1.94:1	1.94:1
4.3LXH w/1.62:1	No Change	No Change	1.81:1	1.94:1
4.3LH w/1.62:1	No Change	No Change	1.81:1	2.00:1
262 Magnum EFI Gen+ w/1.62:1	No Change	No Change	1.81:1	1.94:1
5.0L w/1.65:1	No Change	No Change	1.84:1	1.84:1
5.0LX w/1.50:1	No Change	1.65:1	1.65:1	1.84:1
5.7L w/1.50:1	No Change	1.65:1	1.65:1	1.84:1
5.7L 2-Barrel w/1.62:1	No Change	No Change	No Change	1.81:1
5.7LX w/1.47:1	No Change	No Change	1.62:1	1.81:1
5.7L EFI w/1.62:1	No Change	No Change	No Change	1.81:1
5.7LX EFI Gen+ w/1.47:1	No Change	No Change	1.62:1	1.81:1
350 Magnum w/1.47:1	No Change	No Change	1.62:1	1.81:1
350 Magnum EFI Gen+ w/1.47:1	No Change	No Change	1.62:1	1.81:1
350 Magnum MPI w/1.47:1	No Change	No Change	1.62:1	1.81:1

**NOTE 1:** Order High Elevation Gear Kit P/N 43-13730A1. Use gears (in kit) as a complete set. Drive unit damage will occur if gears are intermixed. This kit changes the lower gear housing from a 1.65:1 gear ratio, with 17/28 gears to a 2.00:1 gear ratio. With 13/21 lower gears it changes the lower unit from a 1.62:1 gear ratio to a 2.00:1 gear ratio, with an overall drive unit gear ratio from the original 1.98:1 with 17/28 gears or 1.94:1 with 13/21 to a 2.40:1 overall ratio. Follow the instructions in the kit.

**NOTE 2:** When changing over a 2.00:1 ratio Alpha One Generation II 1998 model drive for high altitude it will be necessary to change the upper gears only from the tooth count of 24/24 to a set with the tooth count of 20/24 to accomplish a 2.40:1 overall ratio.

<b>ALTERNATE ELEVATION GEAR RATIOS</b>				
<b>Bravo One Models</b>				
<b>Elevation</b>	<b>3500 - 5000 (Feet)</b>		<b>Above 5000 (Feet)</b>	
<b>Boat Length</b>	<b>Up to 21'</b>	<b>21' and Above</b>	<b>Up to 21'</b>	<b>21' and Above</b>
5.7L 2-Barrel w/1.65:1	No Change	No Change	No Change	No Change
5.7LX w/1.65:1	No Change	No Change	No Change	No Change
5.7L EFI w/1.65:1	No Change	No Change	No Change	No Change
5.7LX EFI w/1.65:1	No Change	No Change	No Change	No Change
5.7LX EFI Gen+ w/1.50:1	No Change	No Change	1.65:1	1.65:1
350 Magnum MPI Gen+ w/1.50:1	No Change	No Change	1.65:1	1.65:1
7.4L w/1.50:1	No Change	No Change	1.65:1	1.65:1
7.4LX EFI w/1.50:1	No Change	No Change	No Change	1.65:1
7.4LX MPI w/1.50:1	No Change	No Change	No Change	1.65:1
454 Magnum w/1.50:1	No Change	No Change	No Change	1.65:1
454 Magnum MPI w/1.50:1	No Change	No Change	No Change	1.65:1
502 Magnum MPI w/1.50:1	No Change	No Change	No Change	1.65:1
D2.8L D-Tronic w/1.50:1	No Change	No Change	No Change	1.65:1
D3.6L w/1.50:1	No Change	No Change	No Change	1.65:1
D4.2L w/1.50:1	No Change	No Change	No Change	1.65:1
D4.2L D-Tronic w/1.50:1	No Change	No Change	No Change	1.65:1
D7.3L D-Tronic w/1.50:1	No Change	No Change	No Change	1.65:1

<b>ALTERNATE ELEVATION GEAR RATIOS</b>				
<b>Bravo Two Models</b>				
<b>Elevation</b>	<b>3500 - 5000 (Feet)</b>		<b>Above 5000 (Feet)</b>	
<b>Boat Length</b>	<b>Up to 21'</b>	<b>21' and Above</b>	<b>Up to 21'</b>	<b>21' and Above</b>
4.3LX Gen+ w/2.20:1	No Change	No Change	No Change	No Change
4.3LXH Gen+ w/2.20:1	No Change	No Change	No Change	No Change
262 Magnum EFI Gen+ w/2.20:1	No Change	No Change	No Change	No Change
5.7L 2-Barrel w/2.20:1	No Change	No Change	No Change	No Change
5.7L EFI w/2.20:1	No Change	No Change	No Change	No Change
5.7LX w/2.20:1	No Change	No Change	No Change	No Change
5.7LX EFI Gen+ w/2.00:1	No Change	No Change	2.20:1	2.20:1
350 Magnum MPI Gen+ w/2.00:1	No Change	No Change	2.20:1	2.20:1
7.4L w/2.00:1	No Change	No Change	No Change	2.20:1
7.4LX EFI w/2.00:1	No Change	No Change	No Change	2.20:1
7.4LX MPI w/2/00:1	No Change	No Change	No Change	2.20:1
454 Magnum w/1.81:1	No Change	No Change	2.00:1	2.20:1
454 Magnum MPI w/1.81:1	No Change	No Change	2.00:1	2.20:1
502 Magnum MPI w/1.81:1	No Change	No Change	2.00:1	2.20:1
D2.8L D-Tronic w/2.20:1	No Change	No Change	No Change	No Change
D3.6L w/2.20:1	No Change	No Change	No Change	No Change
D4.2L w/2.00:1	No Change	No Change	2.20:1	2.20:1
D4.2L D-Tronic w/2.00:1	No Change	No Change	2.20:1	2.20:1

<b>ALTERNATE ELEVATION GEAR RATIOS</b>				
<b>Bravo Three Models</b>				
<b>Elevation</b>	<b>3500 - 5000 (Feet)</b>		<b>Above 5000 (Feet)</b>	
<b>Boat Length</b>	<b>Up to 21'</b>	<b>21' and Above</b>	<b>Up to 21'</b>	<b>21' and Above</b>
4.3LX Gen+ w/2.43:1	No Change	No Change	No Change	No Change
4.3LXH Gen+ w/2.20:1	No Change	No Change	No Change	2.43:1
262 Magnum EFI Gen+ w/2.20:1	No Change	No Change	No Change	2.43:1
5.7L 2-Barrel w/2.20:1	No Change	No Change	No Change	2.43:1
5.7L EFI w/2.20:1	No Change	No Change	No Change	2.43:1
5.7LX w/2.20:1	No Change	No Change	No Change	2.43:1
5.7LX EFI w/2.20:1	No Change	No Change	No Change	2.43:1
5.7LX EFI Gen+ w/2.00:1	No Change	No Change	2.20:1	2.43:1
350 Magnum MPI Gen+ w/2.00:1	No Change	No Change	2.20:1	2.43:1
7.4 LX EFI w/2.00:1	No Change	No Change	2.20:1	2.43:1
7.4 LX MPI w/2.00:1	No Change	No Change	2.20:1	2.43:1
454 Magnum w/1.81:1	No Change	No Change	2.00:1	2.20:1
454 Magnum MPI w/1.81:1	No Change	No Change	2.00:1	2.20:1
502 Magnum MPI w/1.81:1	No Change	No Change	2.00:1	2.20:1
D2.8L D-Tronic w/2.20:1	No Change	No Change	2.43:1	2.43:1
D3.6L w/2.00:1	No Change	No Change	2.20:1	2.43:1
D4.2L w/1.81:1	No Change	No Change	2.20:1	2.43:1
D4.2L D-Tronic w/1.81:1	No Change	No Change	2.20:1	2.43:1

<b>ALTERNATE ELEVATION GEAR RATIOS</b>				
<b>BlackHawk</b>				
<b>Elevation</b>	<b>3500 - 5000 (Feet)</b>		<b>Above 5000 (Feet)</b>	
<b>Boat Length</b>	<b>Up to 21'</b>	<b>21' and Above</b>	<b>Up to 21'</b>	<b>21' and Above</b>
350 Magnum MPI Gen+ w/1.65:1	No Change	No Change	No Change	1.81:1
454 Magnum MPI w/1.50:1	No Change	No Change	1.65:1	1.81:1
502 Magnum MPI w/1.50:1	No Change	No Change	1.65:1	1.81:1