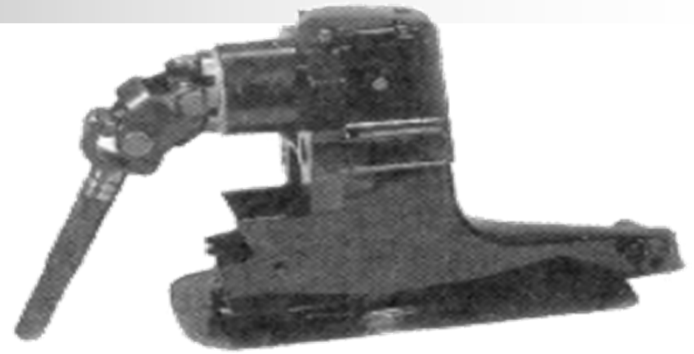


# DRIVE SYSTEMS



# Driveshafts – Couplers – U-joints

- The engine and stern drive unit is coupled together via the coupler and drive shaft assembly
- Most common causes of failure are due to misalignment, lack of lube, and improper bonding
- Driveshaft assemblies consist of a long driveshaft, center socket, short yoke all coupled together by two u-joints



# Gimbal Bearing

- The gimbal bearing is located in the gimbal housing supporting the yoke assembly
- There are many inexpensive bearings on the market today. Sure, they may look the same and have the same reference numbers or markings, but how tight are the tolerances in manufacturing? What grades of materials are being used?



# Gimbal Bearings 18-2100 and 18-21005

- Precision ground alignable ball bearings utilizing deep groove construction with larger balls and thicker rings for high capacity and longer life
- Micro polished races eliminate bearing noise
- Extra inner ring width furnishes ultimate shaft and load support and concentricity for high speed precision applications
- Manufactured by an OEM supplier



# Bellows



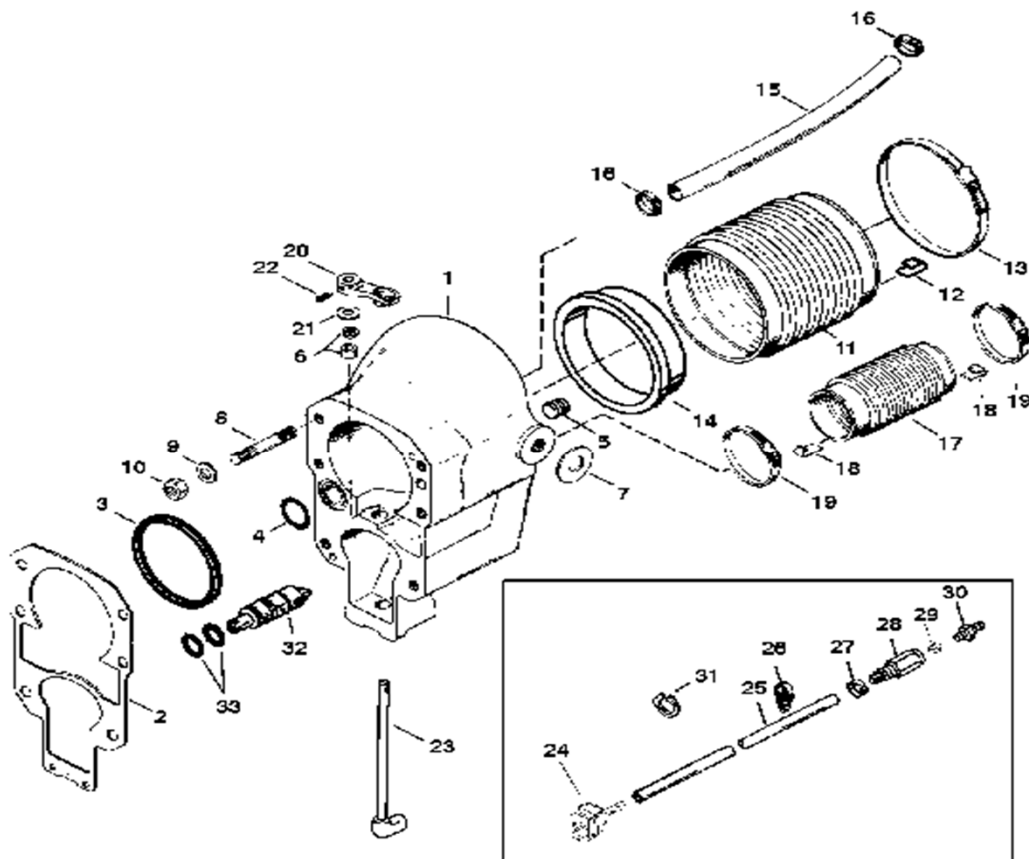
Sierra molded rubber parts are researched identifying dimensions, materials, and performance requirements. Materials are selected focusing on the control of SWELL, COMPRESSION SET, and HARDNESS CHANGE. Production runs are inspected against dimensions from drawings and/or OE samples

# Bellows



- Bellows protect the driveshaft and shift cable from the elements and provides a seal, the exhaust bellows route the engines exhaust through the outdrive unit
- Components are measured using state of the art optical dimensioning equipment
- Materials are selected to withstand environmental conditions to ensure long life
- All bellows kits are packaged with marine grade stainless steel clamps

# Drive Systems Bell Housing





# GHR Installation Kit, Three Kits 18-8311, 18-8312, 18-8313

## **Features/Benefits:**

- Eliminates costly gimbal housing replacements.
- Kit comes complete with all components necessary for repair including bellows.
- Permanent repair – not a quick fix.
- Saves time – faster than a gimbal housing replacement.
- Available for all Mercruiser sterndrives.





# Xtreme Shift Cables

Manufactured using SeaStar Solutions patented Xtreme core technology- no loss motion with smoother operation

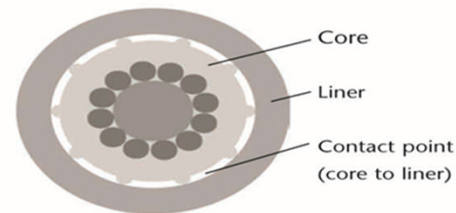
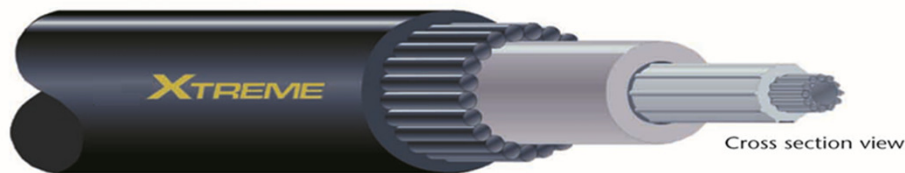
- Lower unit shift cables for MerCruiser 1, R, MR, Gen II, and Bravo applications (18-2190E & 18-2145E)

*Sierra Exclusive!*



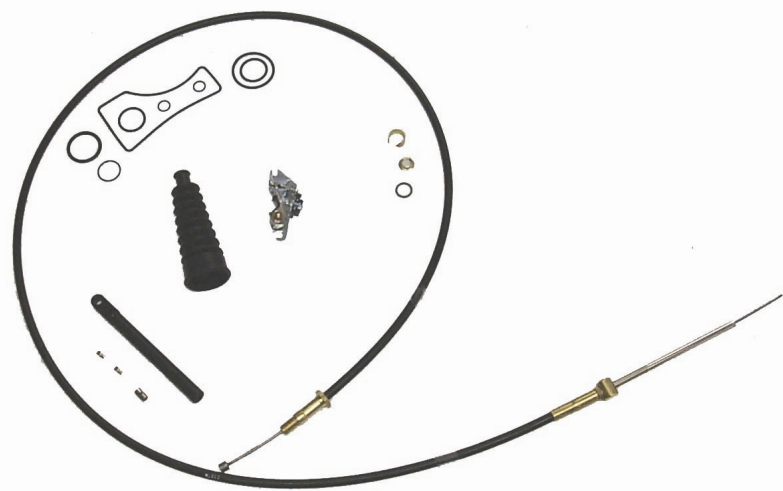
# Xtreme Shift Cables

- Reduced cable friction for smoother shift operation and longer life
- Minimal lost motion for precise shifting with positive feedback
- Super tough HPDE jacket for ultimate protection against the elements
- Self lubricating long wearing HPDE inner liner eliminates friction
- Unique splined core allows for close tolerance with less contact surface



# Sierra Shift Cable Kits

- Sierra offers shift cables for forward and aft installations on MerCruiser drives, as well as OMC's Cobra and King Cobra.
- Shift cable kits have all components needed for a professional installation. This is one of many convenient kits Sierra offers



# Power Trim System

- Trim Cylinders & Repair Kits
- Trim Hoses
- Trim Motors
- Bushings, Pivot Pins, End Caps



# Sierra Drive Program - Upper Unit Gear Kits

- Sierra upper drive gears for MerCruiser are machined from forged blanks to OEM's latest design specifications
- Drive ratio must be determined for proper application 1.5:1 (V-8), 1.65:1 (I-6), 1.84:1 (V-6 & Model 470 I-4), 1.98:1 (I-4)
- Available as gear sets or upper unit rebuild kits
- All kits complete with required bearings, o-rings, shims, seals, and gaskets



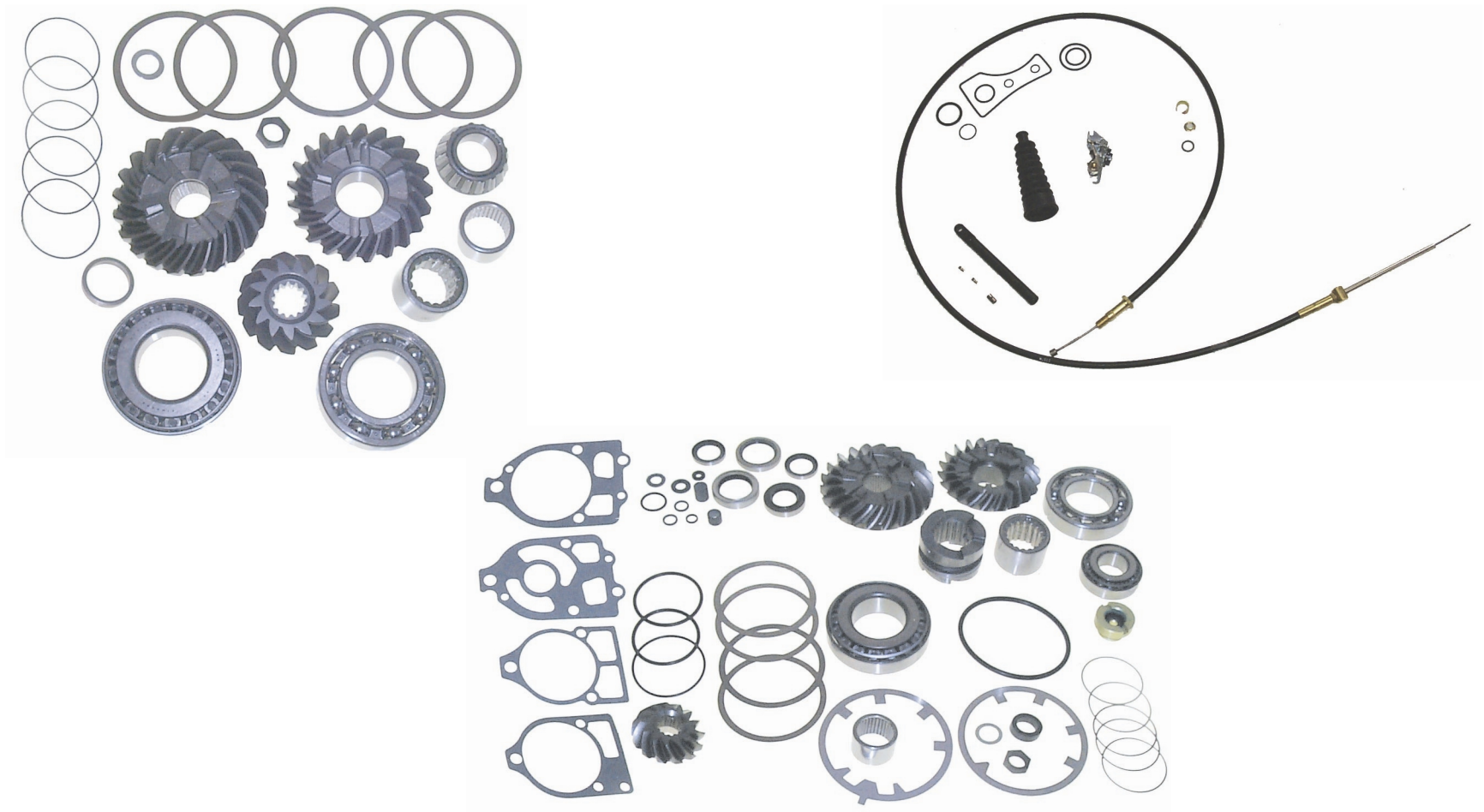
# Sierra Drive Program - Lower Unit Gear Sets

- Located in the lower unit, these spiral bevel gears transfer the power from the vertical driveshaft to the horizontal prop shaft
- Our gear machining process for MerCruiser gear sets is very similar to the OE and dimensionally exact
- Our gears are cut from tempered forgings, a higher quality product is produced using forged steel verses bar stock steel



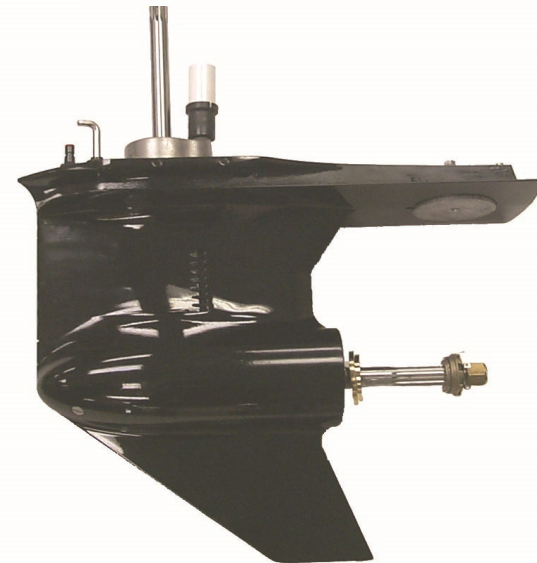


**Sierra Drive kits supply you with all needed components to complete the job**



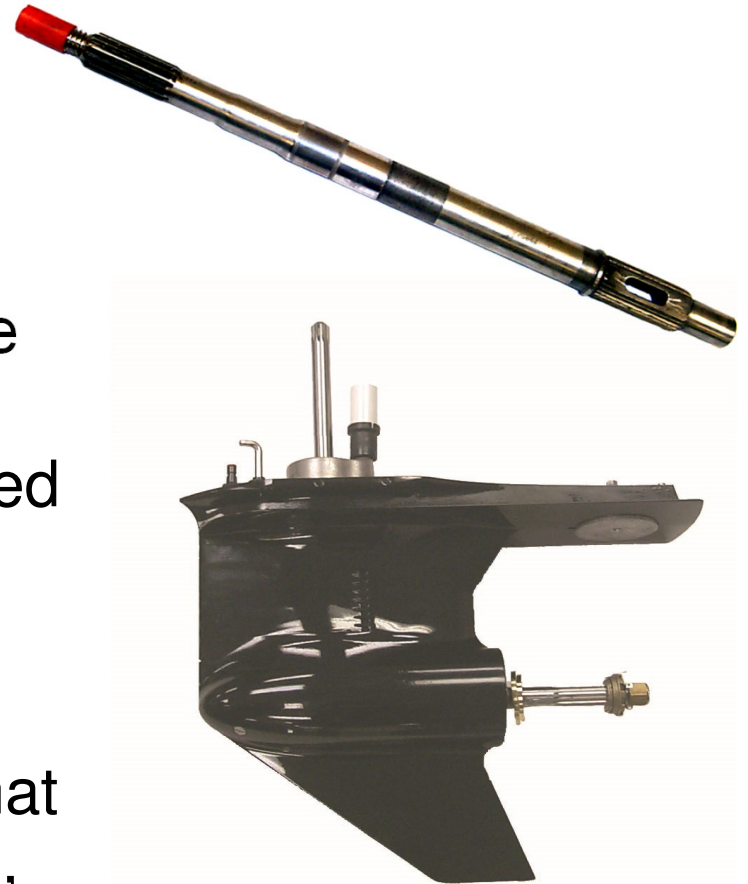
# Sierra Drive Program - Lower Unit Gear Sets

- Forgings are stamped from certified 8620 and 9310 aircraft quality steel
- All gears are machined from forged steel blanks
- Heat treat specifications are batch certified
- Gear configurations verified by CMM (Coordinate Measuring Machine) technology



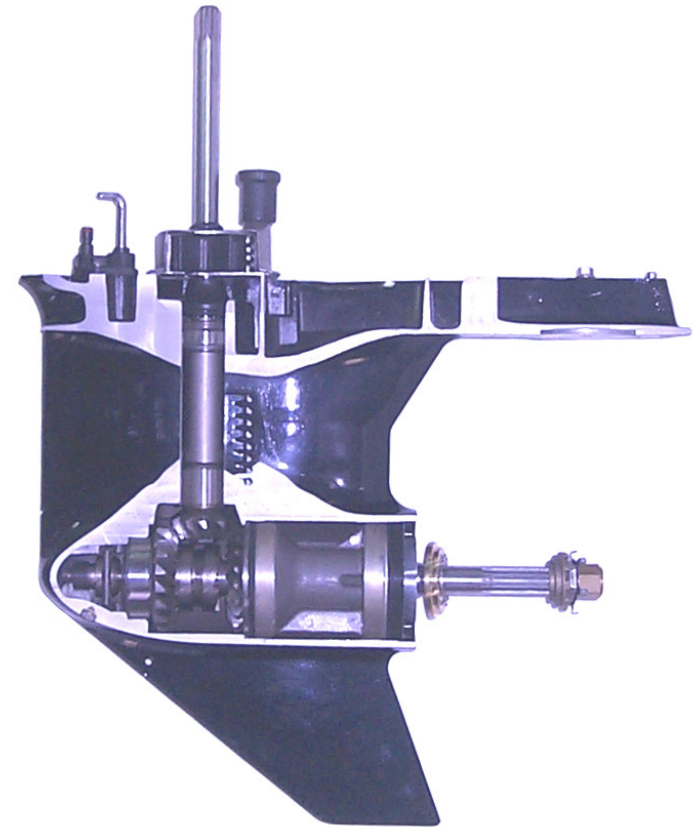
# Sierra Drive Program - Driveshafts & Propshafts

- Inertia welded 17-4 PH and 8620 carbon certified steels
- Rockwell hardened, ground, and micro polishing create bearing race quality surfaces
- Less than .001 T.I.R. (Total Indicated Run-out)
- Involute splines used for all shafts and gears
- These shafts withstand stresses that result from combinations of torsion, bending, and shock loading



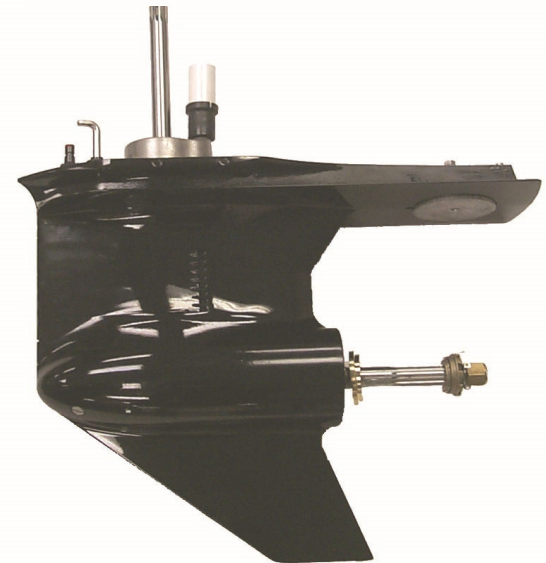
# Sierra Drive Program-Upper & Lower Assemblies

- Engineered to OEM specification, all parts are fully interchangeable with their OEM counterparts
- Die cast gear housings provide high impact and structural tensile strength to meet high load demands
- Baked enamel paint process provides durable long lasting finish
- Every unit is pressure checked and vacuum tested for quality assurance
- Meets over 300 hours of rigorous on the water testing



# Sierra Drive Program-Upper & Lower Assemblies

- Meets over 300 hours of rigorous on the water testing
- Every unit is assembled following stringent quality control procedures
- Die cast gear housings provide high impact and structural tensile strength
- Baked enamel paint process provides durable long lasting finish
- CNC machined housings for precise tolerances and exact centerlines





# Drive Systems - Seal Kits

- Our wide coverage of seal kits include both Outboards and I/O drive units
- To ensure accuracy and top quality Sierra continually compares our seal kits to the OEM
- All of our suppliers ensure that gasket and seal materials match

