DIE-CAST ZA-27 DOUBLES STRENGTH FOR SUPERWINCH

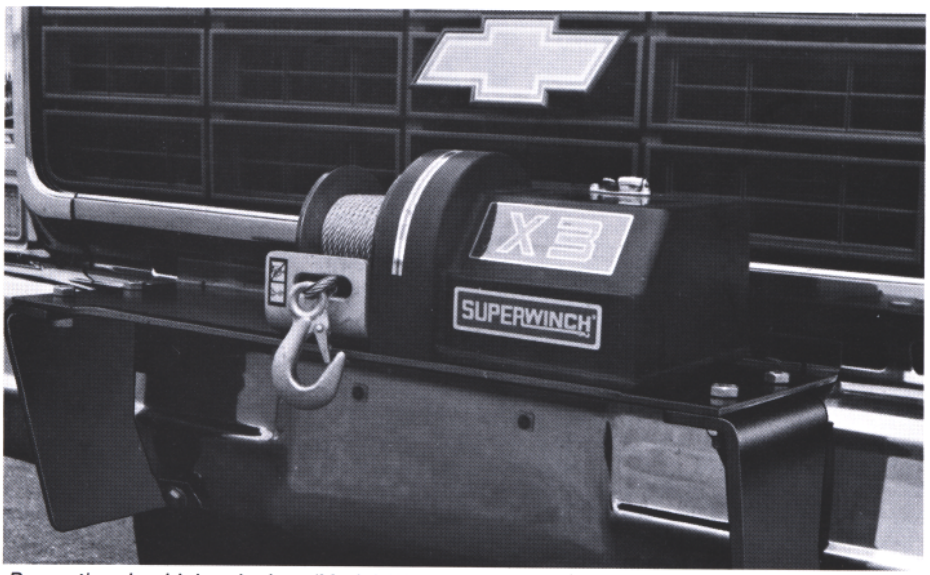
Thanks to high-strength ZA-27 casting alloy, Superwinch Inc., Putnam, Connecticut, eliminated a costly design project, solved a marketing problem, doubled their product line, and it didn't cost them a cent for a new die-cast tooling. ZA-27 is one of Eastern Alloys' new zinc-aluminum (ZA) casting alloys which was developed for sand casting but now is a valuable new cold chamber die-casting alloy for high-strength, wear resistant applications.

What happened was quite simple. Sups winch tried ZA-27 ring gear die castings using the same dies which manufacture the new 1,500 lb. (aluminum) winch. Comparison strength tests showed ZA-27 gears were more than two-and-one-half times stronger than the 380 aluminum die castings. In fact, Superwinch could not break ZA-27 components even when tested to 5,000 lb. load The result was two new winches with load capabilities of 2,500 lbs. and 3,500 lbs. using ZA-27 parts.

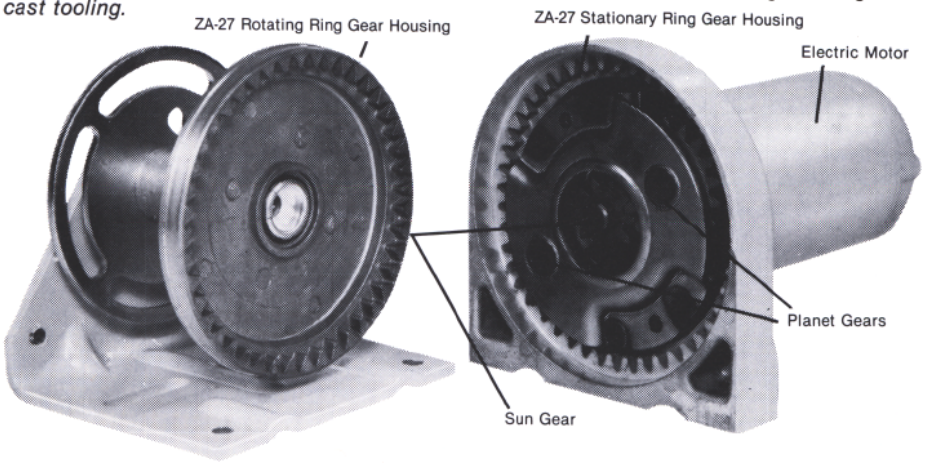
Superwinch is the producer of the world's most popular electric winches for recreational applications. Their recreational products are mounted on cars, trucks, jeeps and trailers for self-winching in rough terrain, or for winching boats, or for any general purpose pulling requirement. Superwinch incorporates two die-cast housings which act as rotating and stationary ring gears. Steel gears transfer winch loads to both die-cast housings and drive the rotating housing which in turn drives the cable take-up shaft for winching. The gear design has been mainstay with Superwinch since the product was introduced ten years ago and is renowned for its simplicity, durability and efficiency. Superwinch also manufactures a heavy duty 8,000 lb. rated winch of a different gear design.

A product gap had originally existed between their two winches (1,500 & 8,000 lb. ratings). "We didn't manufacture anything in between and our marketing people wanted medium load winches for the growing small truck market" stated Bob Nelson, Engineering Manager. "I was faced with an 18-month design project to develop the desired products. Fortunately ZA-27 came along and shortened that effort by nearly a year."

Bob Nelson explains, "Our 1,500 lb. units (X1 & M1) will remain as is with aluminum ring gears, while our X2 & M2 models (2,500 lbs. load) will use one aluminum casting with the more critical rotating ring gear in ZA-27. Our 3,500 lb. rated X3 & M3 winches will use ZA-27 die castings for both gear housings." (X models are for front mounting on vehicles; M models are for rear mounting) Bob also advised, "The superior performance of ZA-27 is partially due to the natural 'lubricity' and higher hardness of ZA-27 castings which reduces friction and therefore increases gear load capabilities and wear resistance." Superwinch was most impressed with the tooling cost savings which allowed them to make three products from one set of die casting dies. Other components for the new models required redesigns and strengthening to meet higher load ratings.



Recreational vehicle winches (Model X3 shown) manufactured by Superwinch, Inc., incorporate die-cast ZA-27 gear housings which were tested 2½ times stronger than 380 aluminum parts and allowed Superwinch to develop new high-load winches using existing die-cast tooling.



Efficient Superwinch design shows sun gear, driven by electric motor, and plant gears which revolve against 5-inch diameter die-cast ring gear housings (stationary and rotating). ZA-27 and aluminum parts are made in the same die-cast tools. ZA-27 components are used only in high-load winch modes where the superior strength and natural lubricity of ZA-27 is required.

The Newton New Haven Company, North Haven, Connecticut, die cast the aluminum and ZA-27 gear housings for Superwinch. Trevor N. Davis, VP of sales, stated, "We foresee ourselves casting more ZA-27 parts when superior strength and good wear properties are needed."

For Superwinch, ZA-27 solved a lot of problems and helped create two new products. Can ZA-27 or one of our other ZA casting alloys do the same for you? Why not give Eastern Alloys a call. We're the leading technical experts on zinc alloys and can answer your design or production questions. **Ask for our full complement of ZA technical Support literature on sand casting, die casting, graphite mold casting (another new development) and on ZA for bearing applications. Just call or write Derek Cocks.**

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