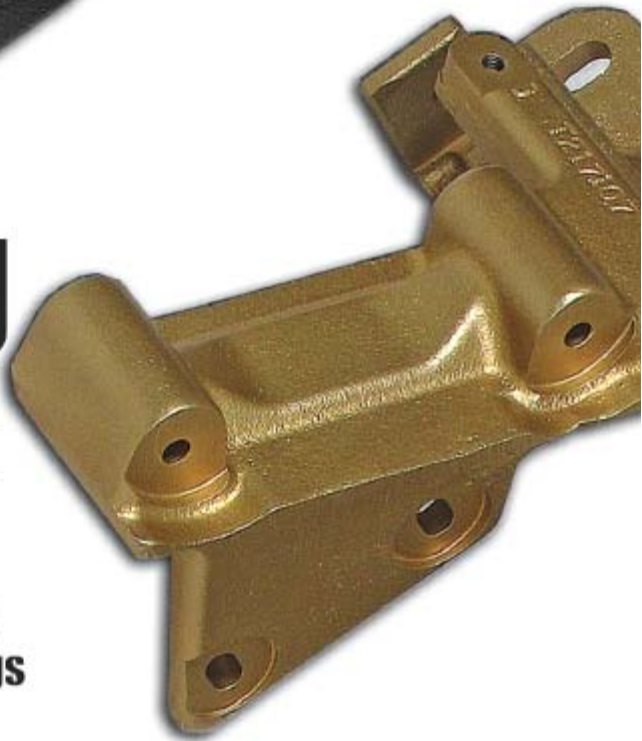




Casting of the Year

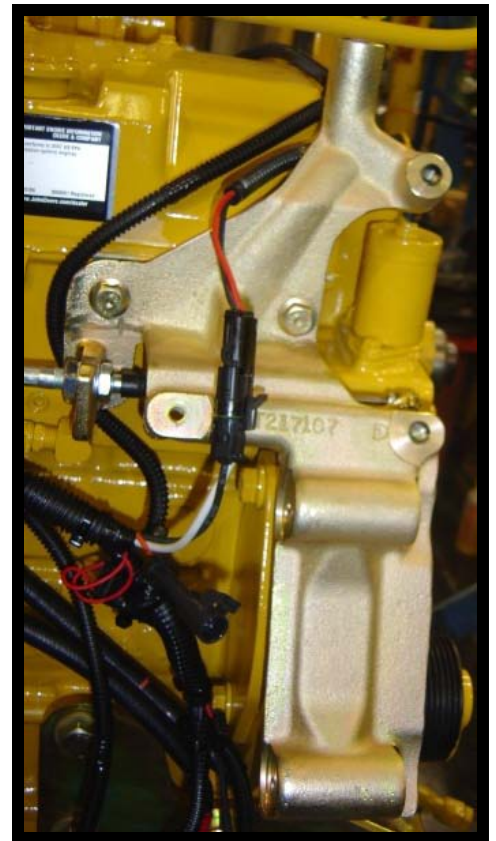
Alternator/AC Bracket
By Dotson Iron Castings



Skid steer loader with air conditioned cab



Alternator & Air Conditioner Condenser Bracket



This alternator and air conditioner condenser bracket supports and attaches the 12 pound high output alternator and 14 pound air conditioning compressor on the engine of John Deere skid loaders. Alignment of the alternator and compressor pulleys to the engine flywheel pulley can be no greater than one half of a degree from parallel.

Replaces an eleven piece weldment



The alternator and air conditioner bracket weldment consisted of eleven pieces of steel stock welded together that required eight set ups for profile sizing and machining. Four unique angle bends were necessary for the welded bracket. Even slight variations in the angle resulted in poor fit and scrap parts.



Cost Savings

Converting the alternator and air conditioner bracket from a weldment to machined casting saves 48% of the cost of a welded assembly. Additional savings are realized with 10% reduced scrap rejections at the assembly line.

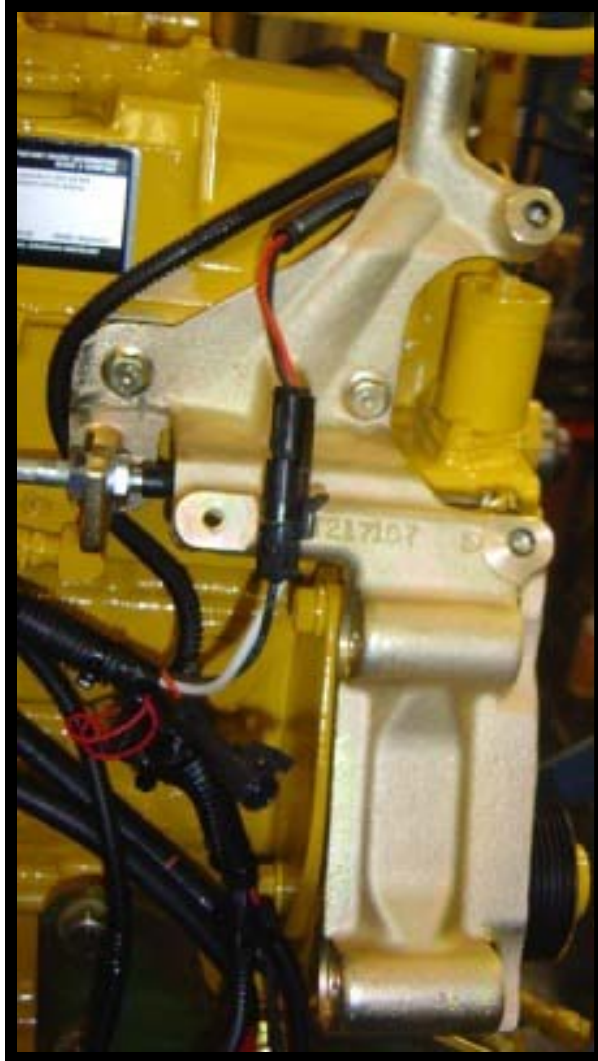


Weldment



Casting

Complex Geometry Problem



The bracket has no mounting surfaces which are parallel to each other. Because of the difficulty in machining on odd angles, the drilled holes and tapped threads were machined prior to assembly of the weldment. Accuracy of the hole alignment was diminished because fixturing couldn't accommodate so many variables.

Solutions



The cast version of the alternator bracket accommodates the various angles and surfaces necessary for accurate mounting surfaces and hole alignment. G&V Machine (Ixonnia, WI) machines the bracket on horizontal CNC's in one set up contributing further to the reduction of machine set ups.

Collaboration



In the casting design process, Dotson foundry engineers worked in collaboration with John Deere engineers to develop a simplified effective casting design that reduced or eliminated necessary cores. Eliminating all but one core reduced the casting cost.

Maximum Space Utilization

Weldment



Casting



The space under the cab is very limited and leaves little room between the bracket and engine profile. Space between the cast bracket and alternator / compressor was reduced to allow for the electronic engine throttle management system.



- **48% Cost savings**
- **Eleven piece conversion**
- **Improved accuracy**
- **Better utilization of space**