

NIMROD 20T QUICK HITCH

BACKGROUND:

Nimrod Engineering Ltd supplies quick hitches for use with a variety of excavators, with a range of pin centres and dipper widths. To reduce the modification and fabrication time needed to fit each different size, a new quick hitch design was required for the 20 tonne range. Design changes were also incorporated to reduce the time and cost of fabrication, avoid complex plate bending, and reduce grinding and finishing time.

SOLUTION:

Manufacturing and assembly issues were solved by changing the centre plate from a complex single plate with six bends to three simple separate plates with single bends. This meant that the bent plates no longer had to match the profile plates perfectly, improving accuracy on assembly, and decreasing preparation work. Effective plate tabbing was employed to reduce the need for expensive jigging. The ease of welding was also considered, allowing sufficient space and cutouts for the welder to work effectively.

A stress analysis was carried out to verify the structural integrity of the design, with additional gussets and stiffeners added as a result (Figure 2).

RESULT:

The final solution is a simple, cost-effective design, and may be modified easily to fit a range of excavator brands of a given size. Motovated Design and Analysis provided a complete set of true plate profiles, bending, weldment and machining drawings for manufacture.

The key advantage of the new quick hitch design is that the same plate profiles may be used for each different excavator model, and modified in the welding and machining stages, resulting in significant dollar savings in the overall cost of the machine.

For more information about this product, contact:

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<http://www.nimrod.co.nz/>

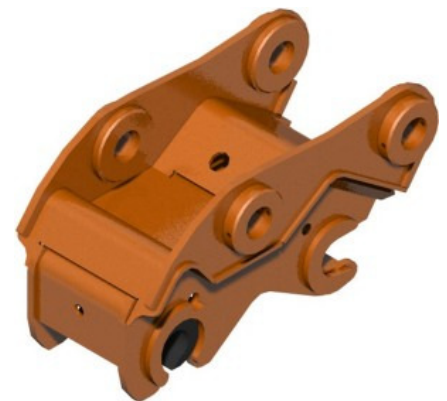


Figure 1: CAD model of the 20T Quick Hitch

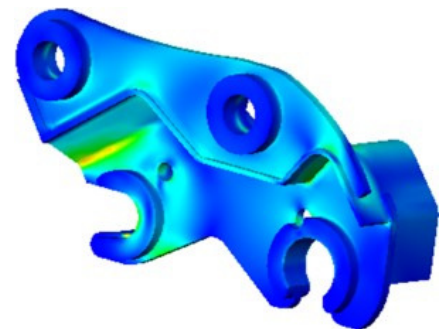


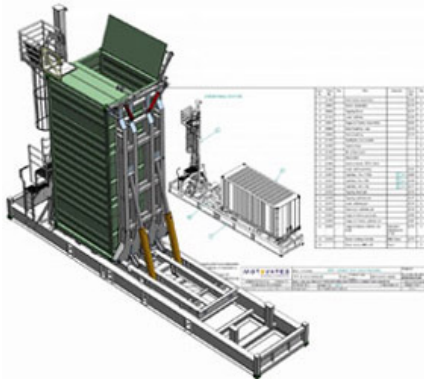
Figure 2: Stress plot of quick hitch, using symmetry

"I was very pleased with the work Motovated carried out for us. They understood what the issues were for a small company like ourselves."

Mark Harrington
Nimrod Engineering Ltd

Taking the Stress out of Engineering Your Vision!

Motovated provides world-class mechanical engineering design and analytical services. Our expert engineers are passionate about engineering your vision, working with you to ensure your needs and deadlines are met. Our communication, professionalism and experience will help you minimise the many risks you face, whilst saving you time and money.

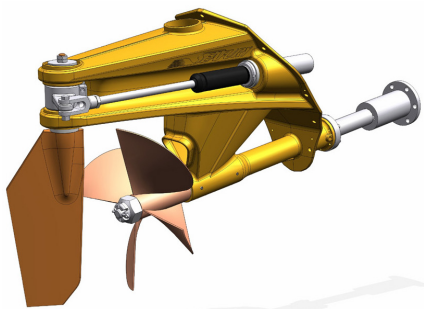


Design of a container bulk loading machine for NZ Express

MACHINE DESIGN

The number and variety of machines that we've helped develop is quite astounding, yet the ideas still keep coming! If you have a clever idea to improve your equipment or machinery, want to develop a completely new industry, or have machinery problems and need helpful solutions, **Motovated** could save you time and money by helping you do it right first time. We can help you with:

- **production machinery** - Mechanising your production process can be key to giving you a competitive edge in speed, quality and cost. Professional design and analysis of your machines will ensure they are robust, efficient, less expensive to build and easy to maintain.
- **consumer machinery** - leveraging the benefits of professional design and analysis, especially when applied as early as possible, will ensure your product is safe, reliable, attractive and less expensive to develop and manufacture



Design of a surface piercing drive product for Seafury International

PRODUCT DEVELOPMENT

Motovated has considerable experience in developing products, and can help you get your product to market sooner. The earlier you get us involved, the more benefit you'll receive from our services! For example:

- **concept design** - our team of engineers can help with brainstorming and come up with additional ideas for your product;
- **patent sketches** - clearly presented sketches will help get your patent application in early;
- **3D design** - photo-realistic visualisation of your concepts will get your marketing underway and help with focus groups, etc;
- **analysis** - stress analysis, function analysis, etc, will ensure your product is safe and reliable;
- **design for manufacture** - improving your margins by reducing material costs and designing for easy manufacture;



Call us now for a free consultation with professional engineers to learn about how **Motovated** can take the stress out of Engineering your vision!

ADDED RESOURCE AND EXPERTISE

Budgeting for and finding good quality Engineers can be difficult, especially when your requirements come in peaks and troughs. **Motovated** can take some of the stress out of your human resourcing by providing our Engineers exactly when you need them, possibly even working in-house along side the rest of your engineering team. By partnering with Motovated, you'll benefit from:

- **top-quality engineers** - with excellent theoretical and practical backgrounds;
- **easy communication** - engineers working in-house have the benefit of immediate access to your other staff, facilities and products;
- **total control** - with immediate feedback on project progress, you have the ability to steer the project as you see fit;
- **an expert support network** - our engineers have the backup of an expert team from a wide variety of backgrounds;
- **the best of both worlds** - employ for the troughs yet have the additional capacity for the peaks.

Taking the Stress out of Engineering Your Vision!