

LOCTITE*Adhesives for more
reliable assemblies***APPLICATION CASE HISTORY****No. 176****Cybox Uses Loctite® RC™ 680 To Cut Assembly
Time/Cost of Exercise Equipment By 13%****Situation:**

Cybox, located in Owatonna, MN, has been manufacturing physical fitness equipment since 1979. These strength and cardiovascular machines are used in large fitness clubs, hospitals/rehabilitation facilities, and high-end home gyms, and have been endorsed by both hollywood celebrities and fitness experts. One of the ways Cybox stays competitive is through ongoing analysis of their production process to find faster, better, cleaner, more cost-efficient assembly methods without sacrificing quality and strength.

The VR-2 is a large product line consisting of 22 different pieces of equipment that provide variable resistance training. Plant assembly is time consuming and labor intensive as most of it is done manually. One area in particular that had been identified as problematic and in need of review was the pivot arms. The pivot arm is tubular steel welded to the frame with a press fit bearing at the pivot point. Welding the tubular steel caused distortion of the tube opening, preventing the press fit of the bearing and requiring reaming to resize the hole.



Cybox uses Loctite® RC™ 680 Retaining Compound to fill the gaps between the tubing and the slip fit bearing on pivot arms of their line of VR-2 variable resistance strength-training equipment.

It was a continuous cycle of welding, distortion and reaming to resize, causing extreme labor costs and time. The only way to eliminate the reaming was to open up the tolerances of the tube, slip fit the bearing and find something to fill the gaps. Since Loctite had provided Cybox with cost-efficient solutions in the past, the engineers called on Loctite again to help find a solution.

Solution:

Loctite® RC™ 680 is a medium-viscosity, fast-curing liquid that fixtures in 10 minutes at room temperature. This high performance retaining compound is designed to fill gaps up to .015" and provide a shear strength ranging from 2800-4000 psi on aluminum and steel.

RC 680 is now used to join the two parts, replacing the reaming and press fit process. The tolerances of the tubular steel are opened up so that the welding does not create enough distortion to prevent a slip fit. After welding, Loctite RC 680 is manually applied to the area between the tubing and the bearing. With looser tolerances the distortion doesn't effect the slip fit process and RC 680 is used to fill the gap and provide the strength to join the parts.

Results:

According to Marty Prins, manufacturing engineer at Cybox, "Loctite has provided us with cost-effective solutions for many applications, but this was the biggest so far. By eliminating the reaming and using RC 680 with a slip fit, we have been able to reduce our assembly costs/time by 13%, and still maintain the reliability of our equipment."

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