

Kerbal Space Program - Feature #322

Lockable/Rigid Docking Collars

03/09/2013 03:30 AM - purpletarget

<b>Status:</b>	New	<b>% Done:</b>	0%
<b>Severity:</b>	Normal		
<b>Assignee:</b>			
<b>Category:</b>	Gameplay		
<b>Target version:</b>			
<b>Platform:</b>		<b>Mod Related:</b>	No
<b>Expansion:</b>			
<b>Description</b>			
Feature to include either add-on "collar" used with existing docking ports, or duplicates of the docking ports that would come in lockable versions. Third option to just add functionality to all docking ports.			
Used in the case of two docking parts that are docked to each other. Would include option on context menu to lock/unlock collar. Locking the collar would make the docking ports rigid, similar to other standard spacecraft parts. Unlocking would return ports to their current semi-flexible state.			
Main advantage in assisting in orbital construction of multipart ships, or carrying subordinate craft. Current wobble problems for orbit build composite craft would be reduced. Good step to orbital constructions on the way to whatever orbital VAB/gantry, strut gun type solutions are eventually contemplated.			

History

#1 - 03/30/2013 06:16 PM - rspeed

I like this idea a lot, as this is very similar to how real spacecraft dock. When they first attach, the connection is both flexible and unpressurized. This is referred to as a "soft" docking, as seen here between MIR and a Space Shuttle Orbiter.

800px-STS-76\_docking\_with\_MIR.jpg  
Once the spacecraft have achieved this step, one or both docking rings will retract, connecting a second set of rings which will then lock together and can handle much larger stresses. At this point the two spacecraft are functionally a single structure. In fact, this is the primary means by which space stations are constructed. While the connections aren't permanent, they are not flexible like in KSP.

In real spacecraft there are both "active" and "passive" docking rings. Active docking rings contain a mechanism to extend the inner ring outward, allowing a soft docking to be achieved safely by adding a margin of safety. In most real-life docking systems you can attach two active rings to each other (though usually one will act like a passive ring in order to prevent complications). Further, you can even attach two passive rings, which is known as berthing, but it requires the use of a robotic arm to precisely align the two spacecraft.

The simplest execution would simply add a "lock" or "hard docking" option to docking rings. When activated, it would simply increase the strength and rigidity of the connection. At the same time, the normal "unlocked" setting could be made weaker and more flexible than it is currently (which may actually make docking easier). I suspect this would be very easy to implement.

A more complex execution could involve both active and passive rings, requiring the active ring to be prepared for docking by extending its inner ring. Include animations and the whole shebang, it would be pretty nifty. Passive rings would be both lighter and (once it matters) cheaper, just as they are in real life.

#2 - 03/30/2013 06:19 PM - rspeed

Another thing just occurred to me:  
  
Before the rings are locked, the two spacecraft could still behave independently. Once the rings are locked, they would merge into a single spacecraft.

#3 - 03/30/2013 07:16 PM - rspeed

And another idea: Docking rings could take damage the same way wheels do now. For example, if you're going too fast when you make contact the active ring won't be able to retract.