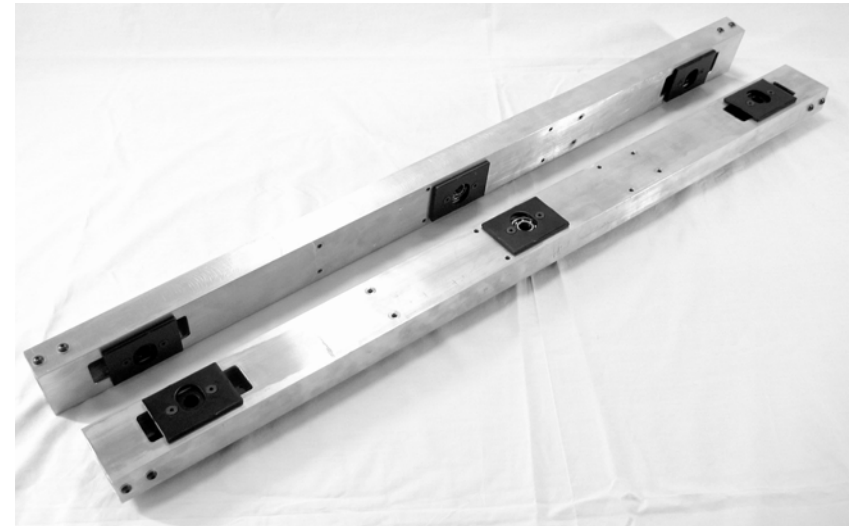


Universal Chassis

Assembly Manual

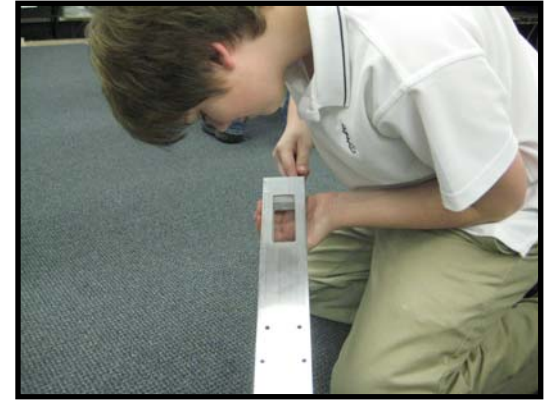


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The structural tube components come direct from the supplier and may have burrs from the manufacturing process.

These burrs need to be removed from the interior of all tubes to ensure proper fit. A flat file works best.



Place the tension end plug in each end of the chassis tube. Also place the smaller end plug in the end of each shorter cross-tube.

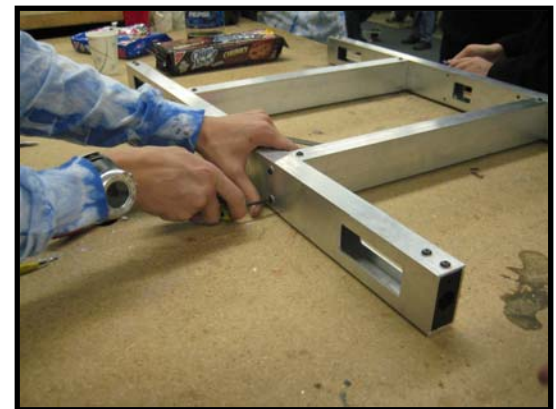
Secure each with a 10-24 BHCS, 3/8" L. Use an aluminum washer under each bolt head.



Place all four chassis tubes on a flat surface and begin bolting them together. Use a 10-24 BHCS, 1 3/4" L. to secure the cross-tubes to the main side rails. Use an aluminum washer under the head of each bolt.

The tubes are symmetric, so orientation is not important.

Carefully align all tube surfaces to guarantee no twist is induced in the main chassis structure.



Place a bearing in one side of the center bearing block.



Attach a clamp plate to one side with 10-24 FHCS, ½" L.

The center hole on each clamp plate is not symmetric. Align the top of the slot consistently on all blocks.



Place the assembly through the center opening in the side rail.

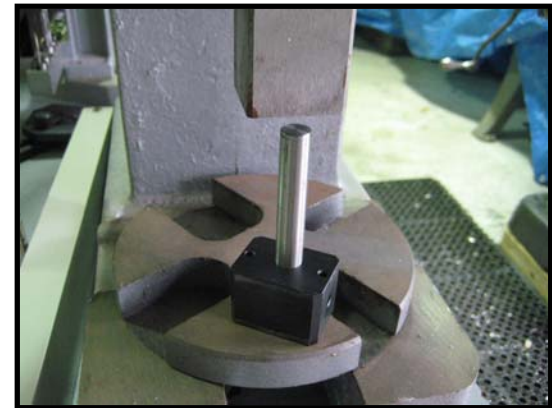


Add a clamp plate and bolts to the opposite side of the center bearing block.



Prepare the axle blocks in the same fashion as the bearing block. Add your own custom wheel shafts at this time, or use the shafts supplied with the FIRST Wheel Kit.

Axle blocks are designed for an interference fit. Loctite is recommended. A set screw may be added using the opposing tensioning bolt hole.



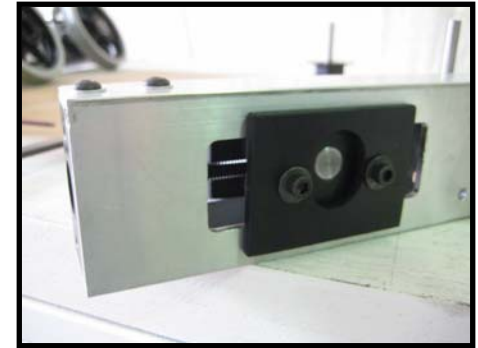
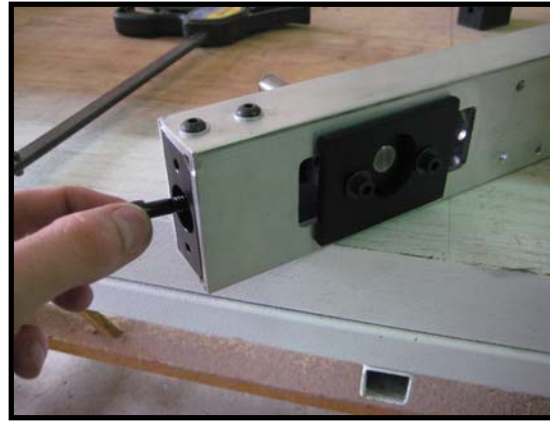
Firmly tighten one clamp plate onto the block, place the block in one of the long slots and add the outside clamp plate. Repeat for four axle blocks.

NOTE: The axle carrier hole in each block is drilled off-center to provide rocker. Ensure each block is installed with the axle hole above center.

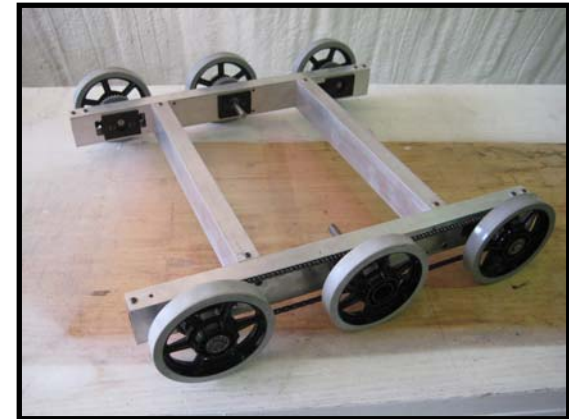


Insert the $\frac{1}{4}$ -20 SHCS, 1 $\frac{3}{4}$ " L. tension bolt into the end of the tube. Tighten the bolt just enough to allow it to grab, later once you add chain you will use this bolt to finally tighten the chain.

NOTE: When adjusting chain, loosen the clamp plate from the axle block from the inside, adjust the chain with the bolt from the tube end then tighten the clamp plate. Check all clamp plates periodically to ensure tightness.



Congratulations! Your Universal Chassis is complete.



See www.team221.com for accessories and ideas about how to outfit your chassis with wheels and power systems.

See the next section for instructions on assembling the FIRST Wheel Adapter Kit.

Tap all six holes of your Andymark FIRST wheels. Make sure to bottom the tap fully.

Use a press or mallet to insert ball bearings into each side of the wheel.



Once you have the drive wheel assembled add a snap ring to the center drive axle and Insert the axle into the wheel.

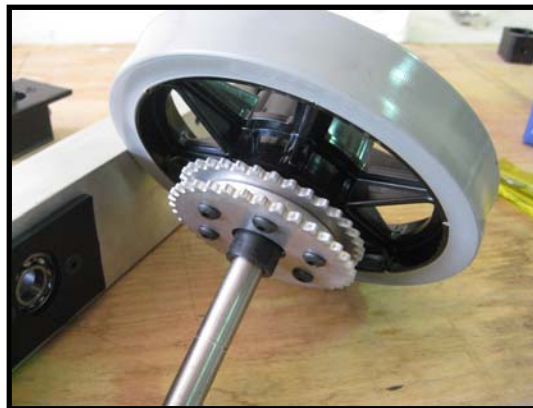
Insert the drive key.



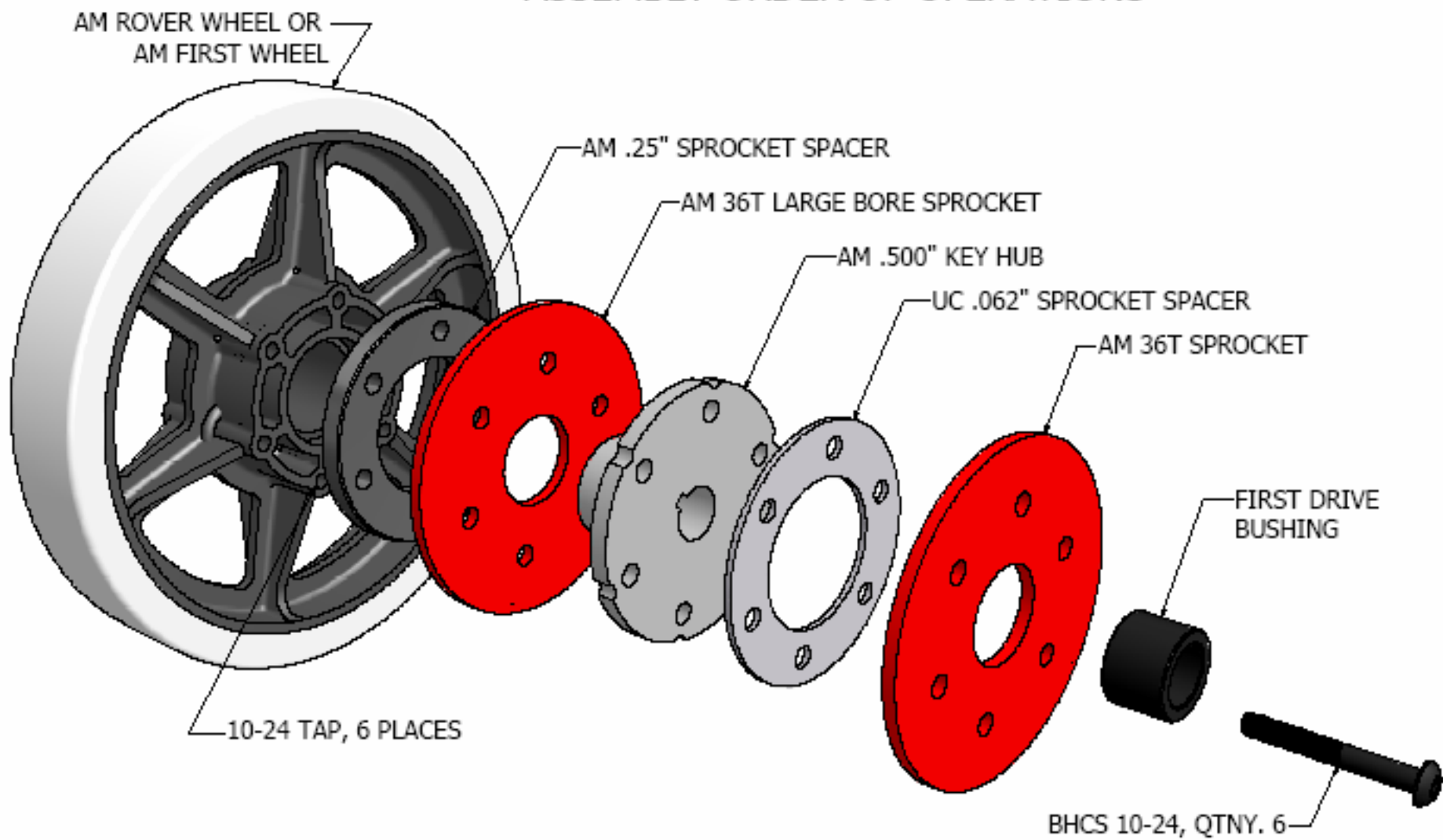
Install the center spacer bushing and place the assembly through the center bearing block.

Place a snap ring on the backside to secure the drive axle.

Add the front and rear wheel in a similar manner.



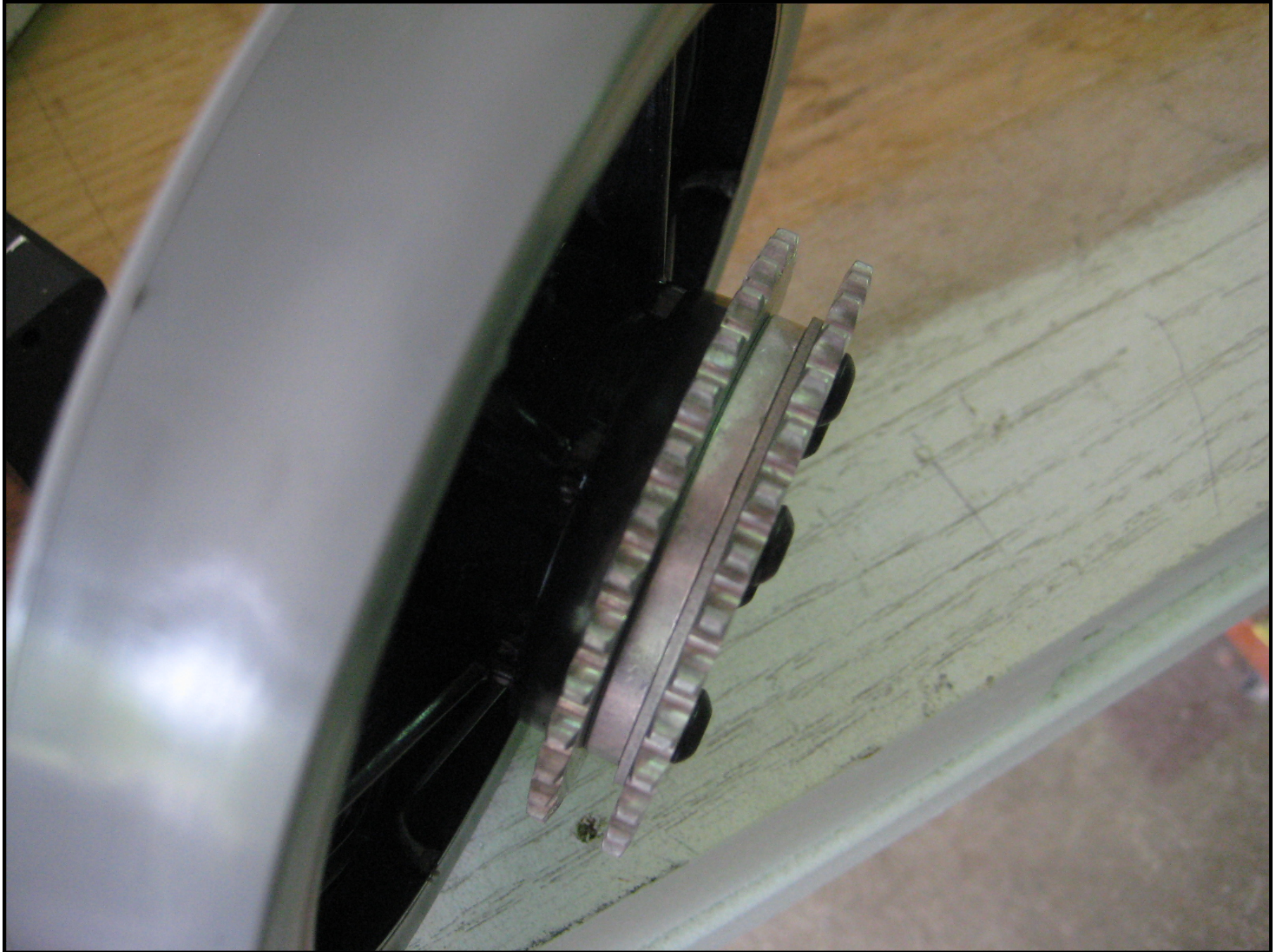
FIRST Wheel Adapter Kit -- Drive Wheel Asm. Explode ASSEMBLY ORDER OF OPERATIONS



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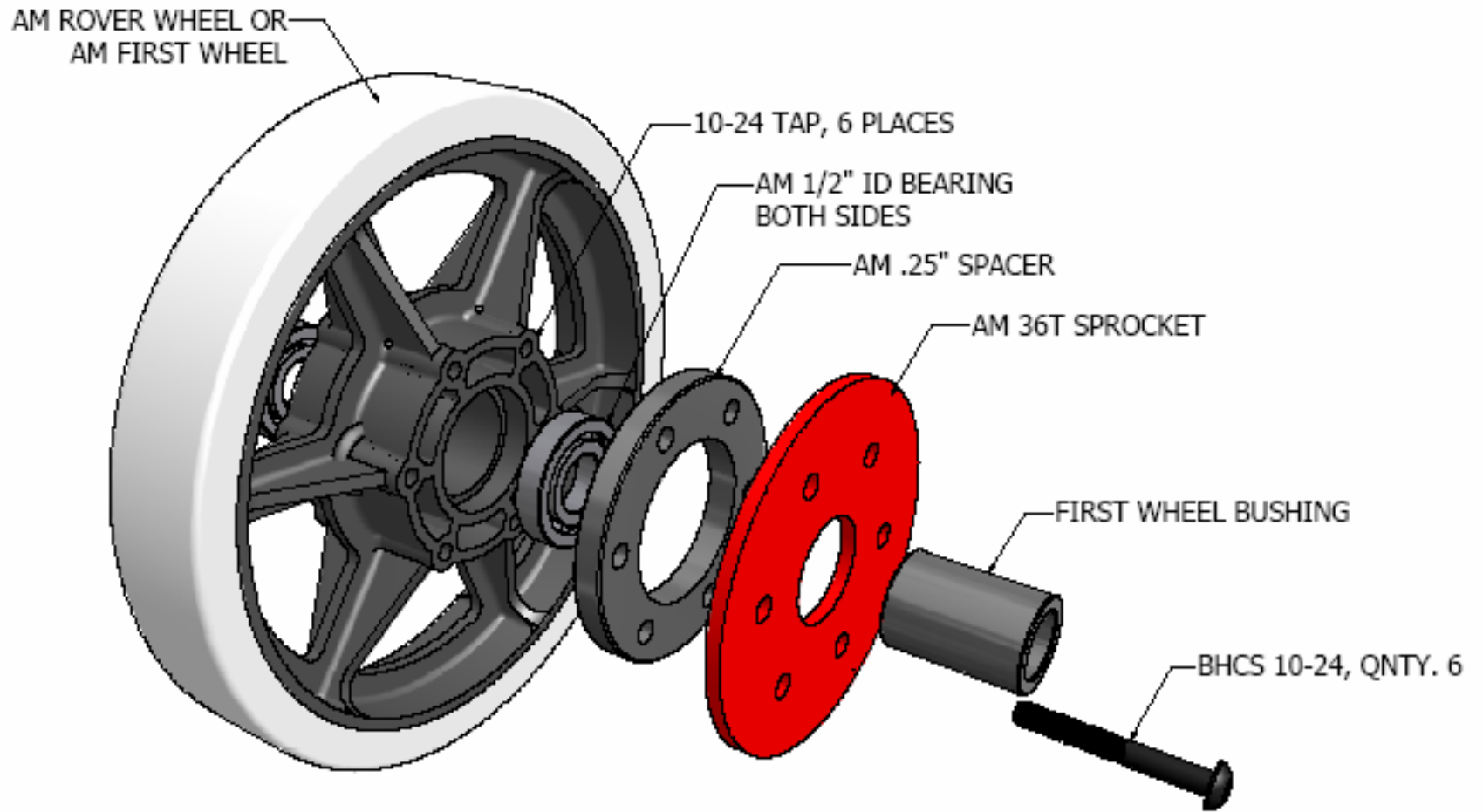
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MATERIAL		
QUANTITY	DATE	Dimensional Tolerance Unless Noted
	1/18/2009	2 PL. ±0.01
		3 PL. ±0.005

Drive Wheel Assembly



FIRST Wheel Adapter Kit -- Wheel Asm. Explode

ASSEMBLY ORDER OF OPERATION



Team 221 LLC.

TITLE		ITEM NO.
first_wheel_asm		
MATERIAL		
QUANTITY	DATE	Dimensional Tolerance Unless Noted
	1/18/2009	2 PL. ±0.01 3 PL. ±0.005

FIRST Wheel Assembly



FIRST Wheel Adapter Kit -- Thick Asm. Explode

ASSEMBLY ORDER OF OPERATIONS

AM ROVER WHEEL OR
AM FIRST WHEEL

10-24 TAP, 6 PLACES

AM 1/2" ID BEARING
BOTH SIDES

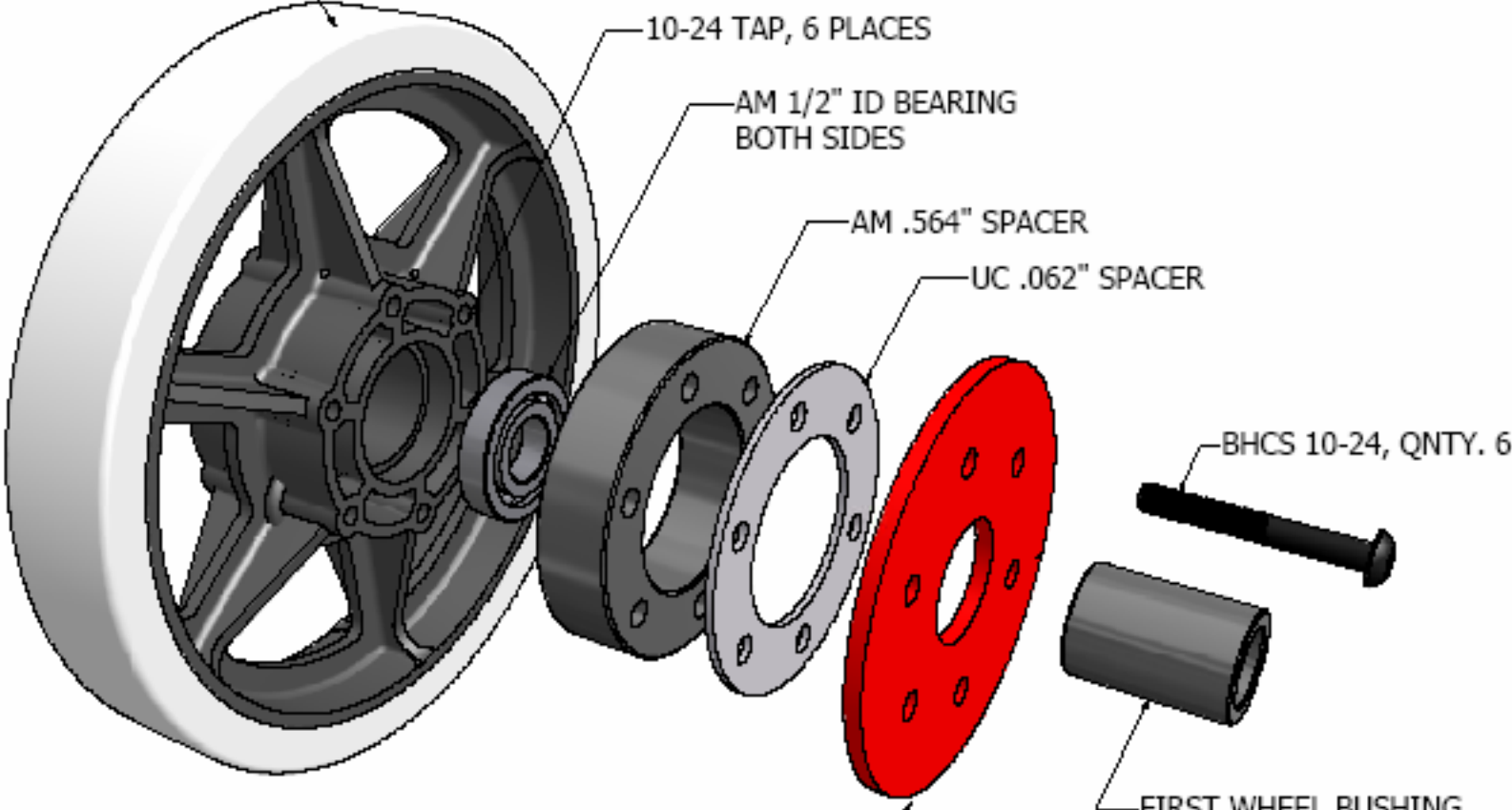
AM .564" SPACER

UC .062" SPACER

BHCS 10-24, QNTY. 6

FIRST WHEEL BUSHING

AM 36T SPROCKET

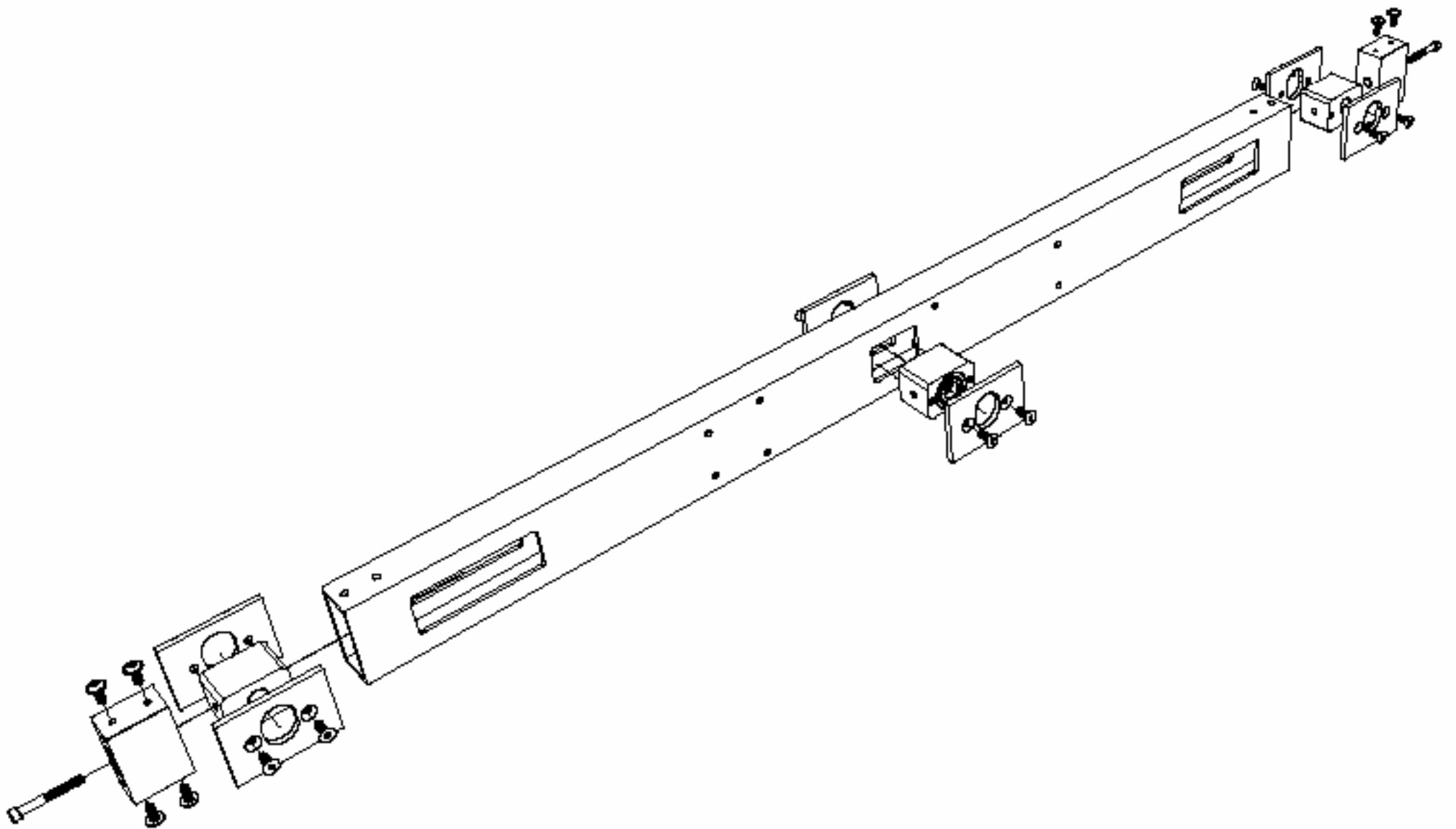


Team 221 LLC.

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MATERIAL		
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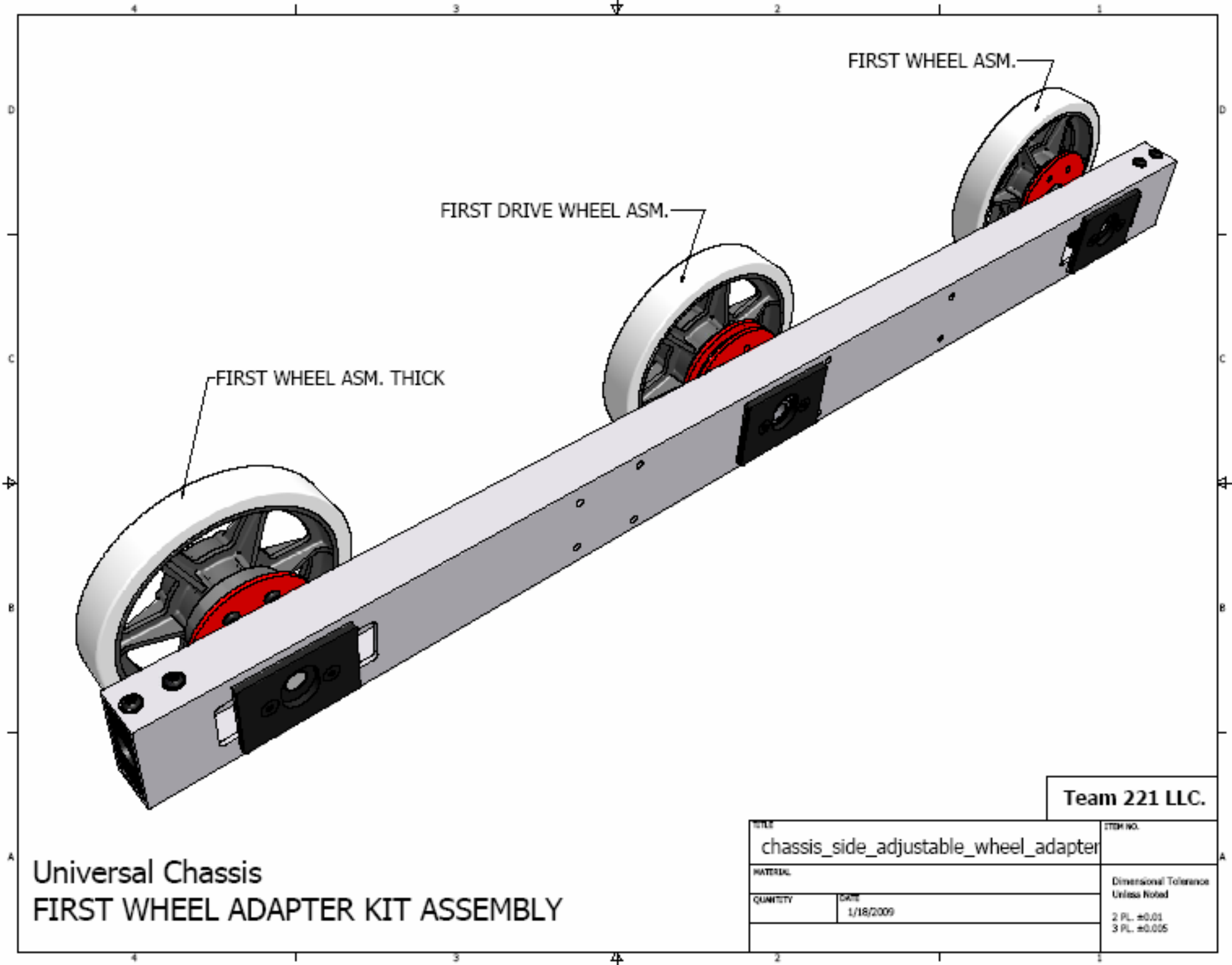
FIRST Wheel Assembly Thick





Team 221 LLC.

chassis_side_adjustable_explode		DATE:
AUTHOR:		OPERATIONAL TOLERANCE:
QUANTITY:	1000000	UNITS: INCH
		DATE: 10/10/2010



Universal Chassis
 FIRST WHEEL ADAPTER KIT ASSEMBLY

Team 221 LLC.

TITLE		ITEM NO.
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MATERIAL		
QUANTITY	DATE	Dimensional Tolerance Unless Noted
	1/18/2009	
		2 PL. ±0.01 3 PL. ±0.005