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MecanAM Chassis
Assembly Guide

MecanAM Recommended Tool List			
Component	Product Number	Used On	Product Photo
¼" Nut Driver	am-3677	6-32 HHS	
1/4" - 5/16" Double Open-End Wrench	am-3174	6-32 HHS 6-32 Jam Nut	
2.5mm Ball End Hex Driver	am-3724	M3 SHCS	
7/64" Hex Driver	am-3032	6-32 SHCS	

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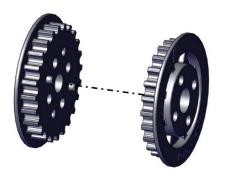| MecanAM Drive Chassis			
Component	Product Number	Quantity	Product Photo
Right BB Mecanum Wheel OR Right HD Mecanum Wheel	am-3735R OR am-4763R	2	
Left BB Mecanum Wheel OR Left HD Mecanum Wheel	am-3735L OR am-4763L	2	
NeveRest Orbital Gear Motor	am-4609a/b, am-3637/b	4	
Side Plate	am-4760	4	
3x25 Grid Plate	am-4758	2	
Cross Plate	am-4759	2	
45T HTD Belt, 225-5M-09	am-3273	2	
105T HTD Belt, 525-5M-09	am-3850	2	
Hex Head Screw, 6-32 x 3/8 in with Thread Lock Patch	am-1562	40	
Hex Head Screw, 6-32 x ¾ in with Thread Lock Patch	am-1564	16	

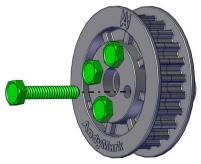|			
Socket Head Cap Screw, 6-32 x 2.125 in	am-1657	8	
4mm ID x 6mm OD x 43mm Spacer	am-1656	8	
Washer, Fender #6 x 5/8" od	am-1658	8	
6-32 Nylock Jam Nut	am-1419	40	
3/8"ID Flanged Shielded Bearing (FR6ZZ)	am-0028	4	
0.375 in Shielded Flanged (FR62RS-Hex) Bearing	am-4489	4	
Pulley Half, 24T HTD 375 Hex Bore	am-3402_half	8	
Pulley Half, 24T HTD 6mm Bore	am-3401_half	8	
6mm D Bore Double Boss Nub	am-4311	4	
375 Hex Spacer, 0.500 inches	am-3947-500	8	
Drive Shaft	am-4761	4	
Socket Head Cap Screw M3-0.5 x 5mm with Patch	am-1675	16	

MecanAM Pulley Assembly

Step 1: Take two 8mm pulley halves and put them together to form one 24T Nub Bore Pulley (am-3401).
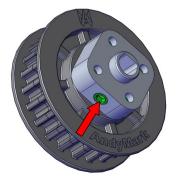
Step 2: Place a 6mm D-Bore Double Boss Nub (am-4311) into the center bore of a 24T Nub Bore Pulley (am-3401).
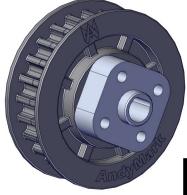
Step 3: Flip the pulley over and secure the Nub to the gear by threading four 6-32 x 0.75 in Hex Head Screws (am-1564).

Step 4: Ensure the #10-32 Set Screw is threaded into the Nub. Keep these set screws loose until installed on the axle.

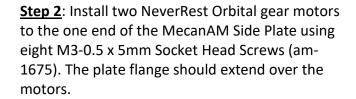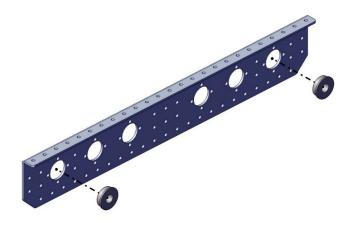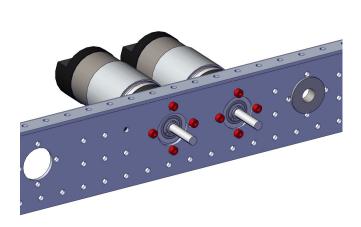**Step 5**. Repeat steps 1-3 to make four (4) total MecanAM 8mm Bore Pulley Assemblies.
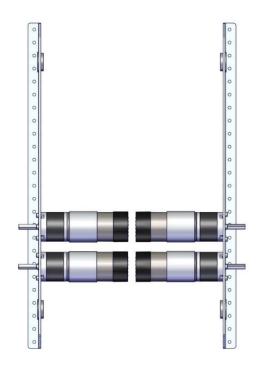
x4

MecanAM Chassis Assembly

Step 1: Install two ⅜ Flanged Round Bearings (am-0028) in the MecanAM Side Plate (am-4760) with the bearing flanges on the same side as the flange on the side plate.
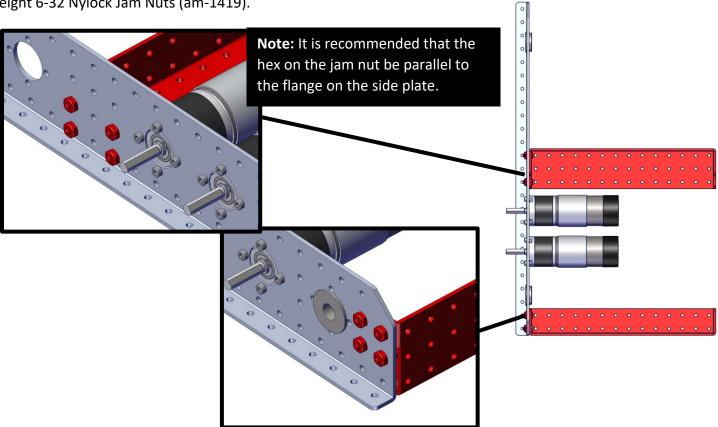
Step 2: Install two NeverRest Orbital gear motors to the one end of the MecanAM Side Plate using eight M3-0.5 x 5mm Socket Head Screws (am-1675). The plate flange should extend over the motors.

Step 3: Repeat step 1 & 2 to install the bearing and motors on the other side plate. When installed, the motors should be mirrored when the plates are lined up as shown below.
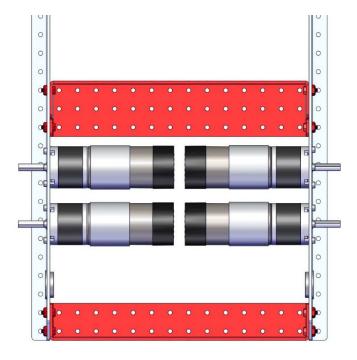
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Step 4: Install two MecanAM Cross Plates (am-4759) using eight 6-32 x ⅜ Hex Head Screws (am-1562) and eight 6-32 Nylock Jam Nuts (am-1419).

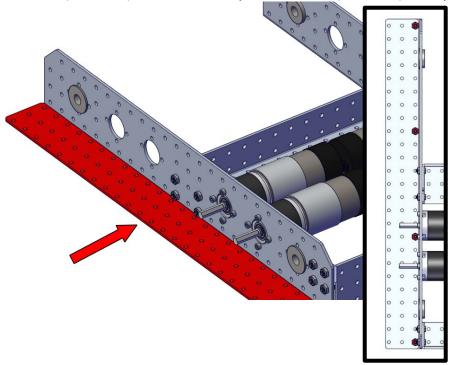**Note:** It is recommended that the hex on the jam nut be parallel to the flange on the side plate.

Step 5: Repeat Step 4 to attach the other plate with motors onto the opposite side.

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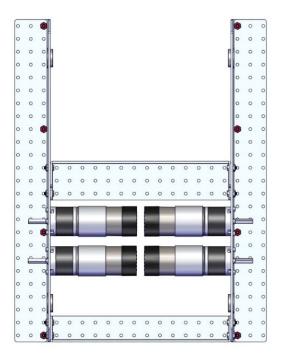**Step 6**: Install one 3x25 Grid Plate (am-4758) to the flange of the MecanAM Side Plate using four 6-32 x ⅜ Hex Head Screws (am-1562) and four 6-32 Nylock Jam nuts (am-1419) evenly spaced along the plate.

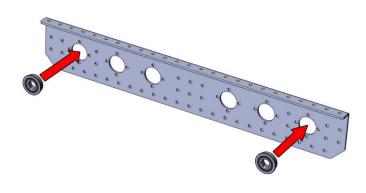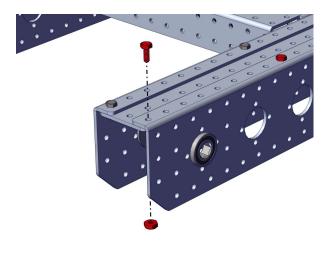**Step 7**: Repeat Step 6 to attach the other 3x25 Grid Plate (am-4758) to the opposite MecanAM Side Plate.

Step 8: Slide four MecanAM Pulley Assemblies on the motor shafts with the Nub side closer to the motor.

Note: Leave set screws loose until belts are installed.
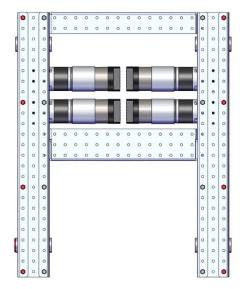
Step 9: Install two ⅜ Flanged Hex Bearings (am-4489) in the MecanAM Side Plate with the bearing flanges on the same side as the flange on the side plate.

Step 10: Install Side Plate to 3x25 Grid Plate using four 6-32 x ⅜ Hex Head Screws (am-1562) and four 6-32 nylock jam nuts (am-1419).
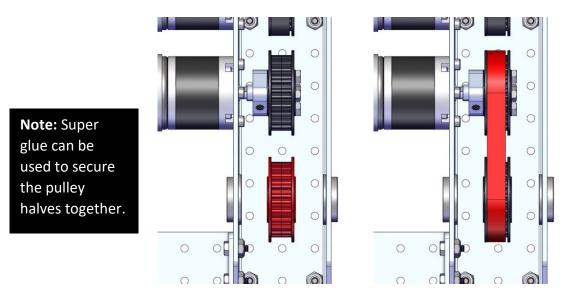

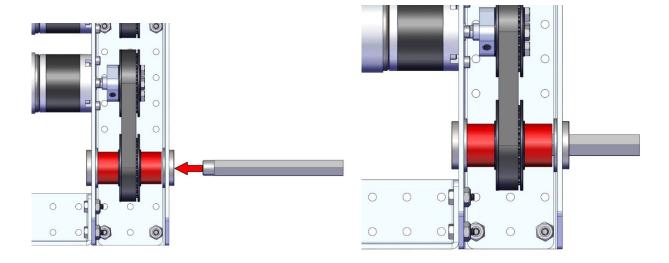**Step 11**: Repeat steps 9 & 10 on the opposite side plate.

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Step 12: Put together two 3/8" hex pulley halves to make a pulley assembly. Place one 45T Belt (am-3273) belt onto the pulley assembly on the motor closest to the end of the MecanAM Side Plate. Place the other end of the belt onto another pulley assembly.
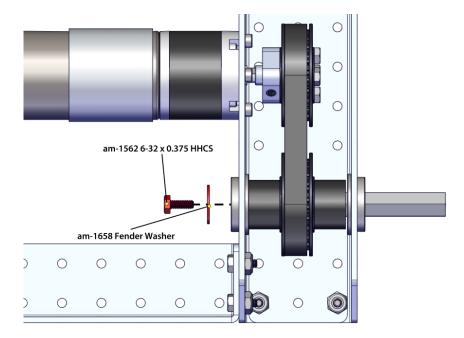
Note: Super glue can be used to secure the pulley halves together.

Step 13: Place a hex spacer (am-3947-500) on either side of the pulley and slide a shaft (am-4761) through the hex bearing, hex spacers and pulley. The round end of the shaft should sit in the bearing in the inner plate.
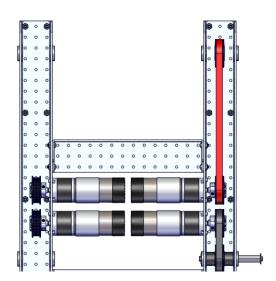
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Step 14: Use a washer (am-1658) and 6-32 x 0.375" Screw (am-1562) to secure the shaft in place.

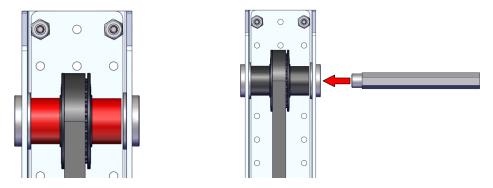am-1562 6-32 x 0.375 HHCS

am-1658 Fender Washer

Step 15: Put together two 3/8" hex pulley halves to make a pulley assembly. Place one 105T Belt (am-3850) onto the pulley assembly on the motor that is closer to the center of the MecanAM Side Plate. Place the other end of the belt onto the pulley assembly.

Note: Super glue can be used to secure the pulley halves together.
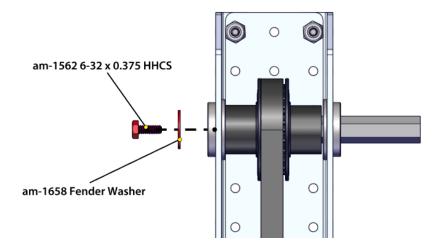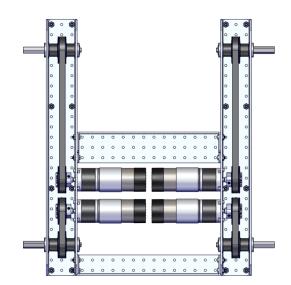
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Step 16: Place a hex spacer (am-3947-500) on either side of the pulley and slide a shaft (am-4761) through the hex bearing, hex spacer, and pulley. The round end of the shaft should sit in the bearing in the inner plate.

Step 17: Use a washer (am-1658) and 6-32 x 0.375" Screw (am-1562) to secure the shaft in place.
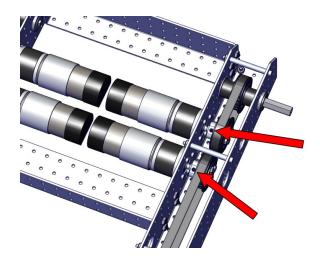

am-1562 6-32 x 0.375 HHCS

am-1658 Fender Washer

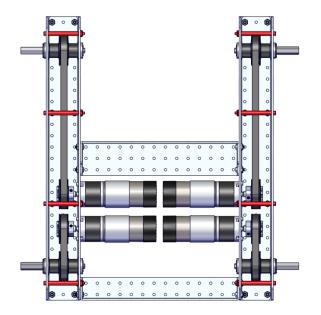**Step 18**: Repeat steps 12-17 on the opposite side of the MecanAM frame.

Step 19: Ensure the belts are parallel to the chassis and tighten the set screws on all of the Nubs to secure the pulley onto the motor shaft.
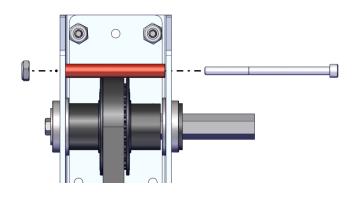

Step 20: Install four 43mm long spacers (am-1657) to the MecanAM Side Plates using four 6-32 x 2⅛ Socket Head Screws (am-1657) and four 6-32 Nylock Jam Nuts (am-1419).

Step 21: Add 7 more spacers evenly spaced onto the chassis.

Note: Screw heads should be on the outside of the frame.

The MecanAM chassis is now complete and ready for wheels.
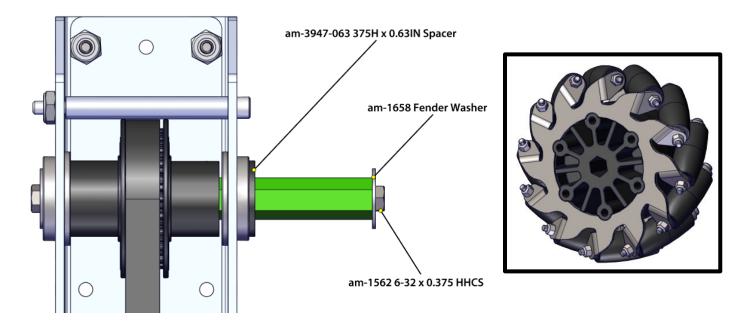
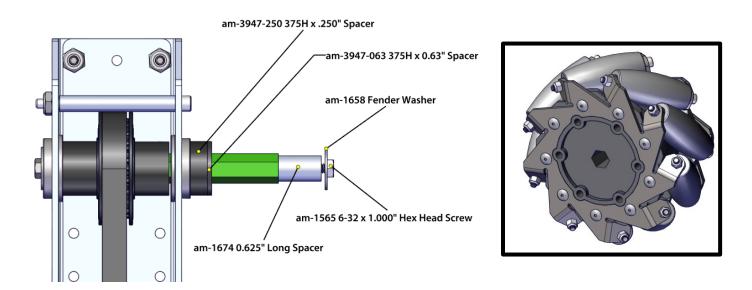AndyMark

Wheel Installation

BB Mecanum

The AndyMark BB Mecanum wheel uses a thin plastic hex spacer against the frame and a 6-32 screw and washer to retain the wheel as shown below.

am-3947-063 375H x 0.63IN Spacer

am-1658 Fender Washer

am-1562 6-32 x 0.375 HHCS

HD Mecanum

The AndyMark HD Mecanum Wheel requires additional spacers to ensure the wheel has enough clearance on the frame and also uses an additional spacer to allow the screw and washer to retain the wheel on the shaft. We recommend the following configuration for spacers on the shaft.

am-3947-250 375H x .250" Spacer

am-3947-063 375H x 0.63" Spacer

am-1658 Fender Washer

am-1565 6-32 x 1.000" Hex Head Screw
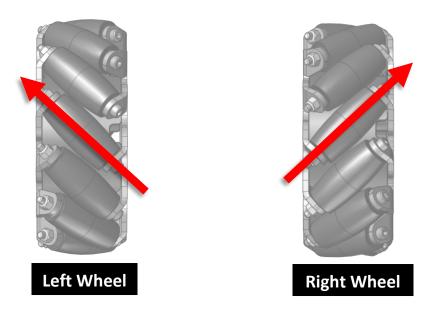
am-1674 0.625" Long Spacer

Other Wheels

Other wheels with a 3/8" Hex bore can be used on the MecanAM chassis. Additional spacers may need to be added to accommodate the size and shape of other wheels.
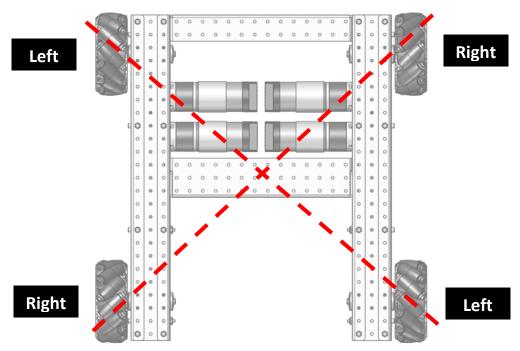
Wheel Placement

Mecanum wheels are built in two configurations. If the rollers point up and to the right, they are "right" orientated wheels. If the rollers point up and to the left, they are "left" oriented wheels.

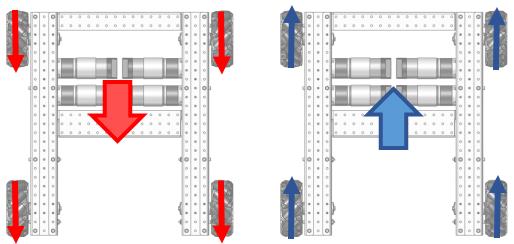**Left Wheel**   **Right Wheel**

Using two "left" and two "right" wheels in the correct orientation allow for omni-directional motion. Mecanum wheels are installed in the correct orientation when the rollers form an X pattern when viewed from the top.
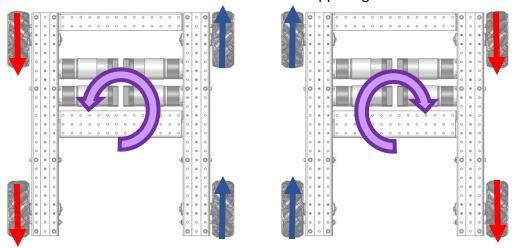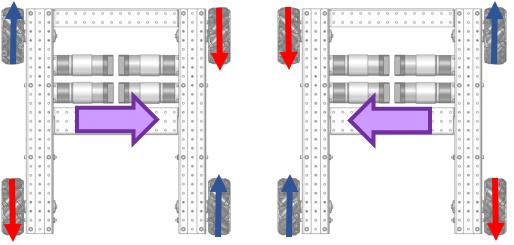
Drive Wheels

When all four mecanum wheels are driven in the same direction the chassis will move **forward** or **backwards**.

When the pair of wheels on each side of the chassis are driven opposing directions the chassis will **rotate**.

When the "right" mecanum wheels on opposite sides of the chassis run in one direction and the "left" mecanum wheels run in the opposite direction, the chassis will "strafe" and move sideways.