

MINIATURE AIRCRAFT USA

PART #0555 - BALL BEARING ANTI-ROTATION

PURPOSE:

Eliminates any swashplate timing changes during full collective range. Provides additional clearance for canopy or fuselage. Note: Does not work with rear gyro mounting plates, without extensive modification. Fits .30/.40 series or .50/.60 series X-Cells.

CONTENTS:

1	#0003	M3 Large Washer
2	#0017	M3 Hex Nuts
1	#0019	M3 Locknut
1	#0067	M3x14 Socket Head Bolt
1	#0089	M3x10 Hex Head Bolt
2	#0099	M3x30 Special Phillips Bolts
1	#0159	Ball Bearing
1	#0555-1	Link w/3.0mm I.D. Ball
1	#0555-2	Slotted Guide Plate
1	#0555-3	"U" Shaped Support Bracket
2	#0687	Steel Spacers

INSTRUCTIONS - READ CAREFULLY PRIOR TO ASSEMBLY...

These instructions will identify specific steps for installation, when using the X-Cell .30/.40 X-Cell series.

STEP 1:

Remove the original #0077 socket head bolt holding the upper bearing block #0182 in place. Slide the "U" shaped support bracket #0555-3 around the upper side frames aligning its holes with those of the main frames and the upper bearing block (see view 1). Install (2) #0099 M3x30 special low profile Phillips head bolt (both from the right side--exhaust side--of the model), Followed by (2) #0017 M3 Hex nuts and Loctite on the left side. **NOTE:** On the X-Cell .30/.40 some distortion will occur in the "U" bracket as it is tightened in place. This is due to the 1.0mm total width difference between the .30/.40 and the .50/.60 X-Cell series. This will cause no problem. Do not substitute M3 locknuts since there is not sufficient thread depth for them to lock properly.

STEP 2:

Remove the rear fore and aft control rod #0227 from the swashplate and the #0157 bellcrank. Remove (1) #0133 ball link and install the rod into the new link (with the 3.0mm I.D. ball) provided. Adjust the ball links of this rod to match the spacing of the front fore and aft pushrod (for level swashplate), however, do not install the rear pushrod yet.

STEP 3:

Select the #0067 M3x14 socket head bolt and stack up the following parts on it. First slide (1) #0159 ball bearing up to the head of the bolt. Follow with (1) #0687 steel sleeve, then the pushrod end with the 3.0mm I.D. ball link and set aside. **SPECIAL NOTE:** If you are installing on an X-Cell .30/.40, remove the #0042

screw and #0361 ball from the rear of the swashplate and save for later use. Carefully drill the hole with a #40 drill (.098"), making sure that the hole is straight and not oversized (one pass with the drill is sufficient). Using slow Cyano, install the bolt/bearing/spacer/link assembly into the swashplate. DO NOT overtighten as either the plastic will be stripped or the ball within the link may compress thus rendering it useless. NOTE: Only (1) #0687 steel sleeve is used between the ball and the bearing, when installing on a .30/.40 helicopter. No steel spacer is between the ball and the swashplate--unlike the .50/.60 application.

For the .50/.60 installation, remove the rear fore and aft hex ball #0107 from the swashplate and set it aside. Slide (1) additional #0687 steel spacer onto the exposed threads of the #0067 M3x14 bolt assembly next to the ball. Thus, now the stacked components for .50/.60 use consist of the bolt/ball bearing/spacer/link with ball/spacer. Install with Loctite into the swashplate. Do not overtighten as the 3.0mm I.D. may compress. Snap the lower ball link into place on the #0157 fore and aft bellcrank.

STEP 4:

For .30/.40 series use, install the previously removed #0042 screw and #0361 ball in place of the original #0044 screw and twin #0361 balls on the left side of the swashplate. For .50/.60 series use, install the previously removed #0107 hex ball in place of the original #0111 double ball unit on the left side of the swashplate. In either case, remove and discard the #0247 anti-rotation arm and pushrod.

STEP 5:

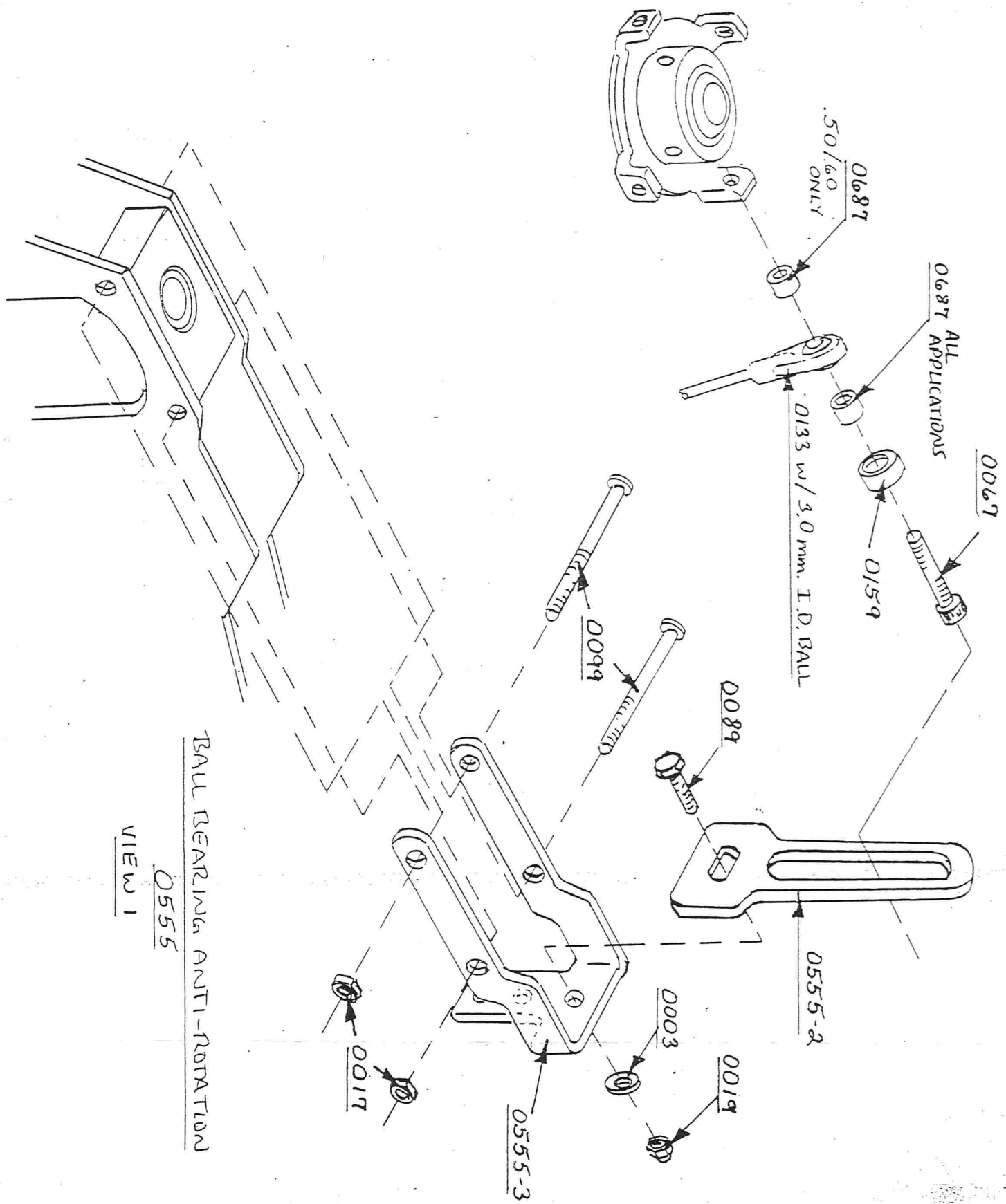
Note the (3) holes in the #0555-3 "U" shaped support bracket. The lower hole is for use with standard length mainshafts--such as #0203 or #0613. The center hole is for use with extended mainshaft #0204 or #0614, when (1) 5.0mm spacer is utilized. The top hole is for use with extended mainshaft #0204 or #0614, when no spacer is used. The slotted guide #0555-2 has a slight horizontally elongated mounting hole in order to allow for some limited swashplate timing. However, we recommend that it be centered within the frames and in line with the mainshaft center line for general use. Some experimentation has been done by either slightly shifting the slotted guide right or left or angling it slightly to achieve various degrees of swashplate timing during different collective positions. This should be left to the expert pilot.

The #0555-2 guide plate mounts to the inside of the "U" brackets (on the mainshaft side) with a #0089 hex bolt, making sure that the ball bearing is inside the slot. Install this bolt from the mainshaft side through the guide plate and the "U" bracket, followed by (1) #0003 M3 large washer and (1) #0019 M3 locknut. Tighten securely after careful alignment as viewed from the rear.

STEP 6:

Once everything is tight, take a look at the unit from the side. Ideally, when the swashplate is level, about 1.0mm of ball bearing should protrude outside the back surface of the guide plate. If not, press the guide plate with light pressure in the desired direction until the correct position is achieved. This will make sure that the ball bearing is always supported during its collective or cyclic travel.

CONTACT MINIATURE AIRCRAFT USA at 407-292-4267, if you have any questions.



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VIEW 1