HOWE PRECISION BALL JOINT MAINTENANCE INSTRUCTIONS

UPPERS

<table>
<thead>
<tr>
<th>Unit</th>
<th>Style</th>
<th>Housing</th>
<th>Cap</th>
<th>Stud</th>
<th>Taper</th>
</tr>
</thead>
<tbody>
<tr>
<td>22300</td>
<td>4 bolt 63-71 GM truck</td>
<td>223220</td>
<td>22321</td>
<td>22330</td>
<td>1.5 inft.</td>
</tr>
<tr>
<td>22301</td>
<td>4 bolt 73-95 GM truck</td>
<td>223220</td>
<td>22321</td>
<td>22350</td>
<td>2.0 inft.</td>
</tr>
<tr>
<td>22302</td>
<td>4 bolt Metric GM car</td>
<td>223221</td>
<td>22321</td>
<td>22360</td>
<td>2.0 inft.</td>
</tr>
<tr>
<td>22303</td>
<td>4 bolt GM car</td>
<td>223221</td>
<td>22321</td>
<td>22380</td>
<td></td>
</tr>
<tr>
<td>22304</td>
<td>3 bolt Vette, Impala</td>
<td>223221</td>
<td>22321</td>
<td>22390</td>
<td>1.5 inft.</td>
</tr>
<tr>
<td>22305</td>
<td>3 bolt Ford</td>
<td>223221</td>
<td>22321</td>
<td>22370</td>
<td></td>
</tr>
<tr>
<td>22306</td>
<td>Screw In IMCA</td>
<td>22322</td>
<td>22321</td>
<td>22360</td>
<td>2.0 inft.</td>
</tr>
<tr>
<td>22320</td>
<td>Screw In Chrysler</td>
<td>22322</td>
<td>22321</td>
<td>22330</td>
<td>1.5 inft.</td>
</tr>
</tbody>
</table>

LOWERS

<table>
<thead>
<tr>
<th>Unit</th>
<th>Style</th>
<th>Housing</th>
<th>Cap</th>
<th>Stud</th>
<th>Taper</th>
<th>Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>22410</td>
<td>71-76 GM car</td>
<td>22417</td>
<td>22415</td>
<td>22430</td>
<td>2.0 inft.</td>
<td>22411</td>
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<tr>
<td>22412</td>
<td>60-66 Mopar</td>
<td>22417</td>
<td>22415</td>
<td>22440</td>
<td>1.5 inft.</td>
<td>22441</td>
</tr>
<tr>
<td>22413</td>
<td>71-76 GM car</td>
<td>22490</td>
<td>22415</td>
<td>22430</td>
<td>2.0 inft.</td>
<td>Press In</td>
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<tr>
<td>22418</td>
<td>70-60 Mopar</td>
<td>22322</td>
<td>22321</td>
<td>22451</td>
<td>1.5 inft.</td>
<td>22340</td>
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<tr>
<td>22419</td>
<td>GM Truck</td>
<td>22492</td>
<td>22415</td>
<td>22460</td>
<td>2.0 inft.</td>
<td>Press In</td>
</tr>
<tr>
<td>22420</td>
<td>GM Car / Mini</td>
<td>224170</td>
<td>22321</td>
<td>22470</td>
<td>2.0 inft.</td>
<td>Press In</td>
</tr>
<tr>
<td>22421</td>
<td>GM Car / Mod</td>
<td>22321</td>
<td>22480</td>
<td>1.6 inft.</td>
<td>Press In</td>
<td></td>
</tr>
<tr>
<td>22422</td>
<td>Dodge Truck</td>
<td>22415</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>22429</td>
<td>IMCA</td>
<td>224170</td>
<td>22321</td>
<td>224298</td>
<td>2.0 inft.</td>
<td>Press In</td>
</tr>
</tbody>
</table>

Common Parts: Grease Zerk 22328, Set Screw 22325, Boot 22399, O-ring 22326

Warning!: On screw in ball joints, use a Howe ball joint socket (#2152 upper, #2153 lower) to install or remove ball joints from the a-frame. Do not use a 1/2” drive wrench in the adjuster cap, the 1/2” broach is for removing and replacing the cap only and will not withstand additional torque. Be certain that the spindle has the proper taper to match the taper of the ball stud! Improperly seated studs can become damaged to the point of failure!

Installation - Screw In
1) Assembled ball joints are shipped from Howe Racing Enterprises internally lubricated, adjusted and ready to install.
2) Apply Anti-Seize to the threads of the Housing.
3) Install the ball joint in the upper a-frame and torque to 100 ft. lbs. clockwise using a ball joint socket.

Installation - Bolt In
1) Place a jack stand under the lower a-frame for support.
2) Remove the spring and shock.
3) Install the housing into the a-frame or gently clamp the housing by the flats in the housing.
4) Assemble ball joints are shipped from Howe Racing Enterprises internally lubricated, adjusted and ready to install.
5) The taper of a Howe ball joint is more precise than other ball joints, which can cause it to be more difficult to remove. Difficult tapers may be separated from the spindle by wedging a pickle fork between the ball joint and the spindle to hold pressure, and then apply heat to the tapered area of the spindle until they separate.

Installation - Press In
1) Install the ball joint on the topside of the upper a-frame & torque the 5/16 bolts to 15 ft. lbs. and on metric ball joints torque the 1/4” bolts to 9 ft. lbs.

Installation - Screw In
1) Place a jack stand under the lower a-frame for support.
2) Install the ball stud into the housing without grease.
3) Set the lash on the ball by loosening the cap 1/8 turn.
4) Set the lash on the ball by loosening the cap 1/8 turn.
5) Apply a small amount of light lubricant to the threads of the cap, install and tighten until it contacts the top of the ball.
6) Use a 3/32” allen wrench to remove the setscrews from the housing.
7) With a 1/2” drive ratchet turn adjuster cap counterclockwise to remove.
8) Clean moving parts to inspect for excessive wear. Replace any parts that are worn or damaged. The ball stud is concentric and should be checked for straightness. Install the ball stud upside down in the housing and spin the stud against the side of the housing with your fingers. If the ball stud is bent, you will see it wobble.

Removing from the A-frame - Bolt In
Remove 5/16” bolts using two 1/2” wrenches.
Metric - Remove each of the 1/4” bolts using two 7/16” wrenches.

Maintenance
Grease after every 300 to 400 laps with low friction grease. We use Citgo MP Lithoplex 3 or Red Line CV2. Unlike conventional ball joints, a Howe ball joint will only accept grease until it is full (typically, one pump or less is required). Once the grease passages are full they will not vent, the pressure from the grease gun can make it difficult to remove the gun from the zerk. To relieve the pressure work the ball stud around to vent grease onto the ball. If the ball joint is on the vehicle, bounce the suspension for the same result. Disassemble annually or every 2000 laps to adjust the lash.

Adjusting the Lash
Lash can be set with the a-frame attached to the car if the spring is unloaded and the ball joint taper is free from the spindle. If you choose to remove the ball joint from the a-frame, gently clamp the housing by the flats in a vise to disassemble.

Disassembly
1) Use a 3/32” allen wrench to remove the setscrews from the housing.
2) With a 1/2” drive ratchet turn adjuster cap counterclockwise to remove.
3) Clean moving parts to inspect for excessive wear. Replace any parts that are worn or damaged. The ball stud is concentric and should be checked for straightness. Install the ball stud upside down in the housing and spin the stud against the side of the housing with your fingers. If the ball stud is bent, you will see it wobble.

Assembly
1) Install the housing into the a-frame or gently clamp the housing by the flats in a vise.
2) Install the ball stud into the housing without grease.
3) Apply a small amount of light lubricant to the threads of the cap, install and tighten until it contacts the top of the ball.
4) Set the lash on the ball by loosening the cap 1/8 turn.
5) Install the setscrews into the housing tightening them evenly. If you have a steel adjuster cap apply blue loctite to setscrews before installing.
6) Using a grease gun, grease and rotate the ball stud by hand until the grease is visible on the bottom of the ball.

Installation - Screw In
1) Assembled ball joints are shipped from Howe Racing Enterprises internally lubricated, adjusted and ready to install.
2) Place a jack stand under the lower a-frame for support.
3) Install the ball joint in the upper a-frame and torque to 100 ft. lbs. clockwise using a ball joint socket.