Kirby Morgan Dive Systems, Inc.®
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Part #525-211
Sealed Pull Pin Overhaul Kit
(For 2 × 505-110 Pull Pins)

Tools and Components Required:

- 9/64 inch Allen Wrench
- Loctite® 248
- Block Of Wood
  Approximately 2″ × 4″ × 8″ with a half inch diameter hole in the center 3/8 to ½ inch deep. See Figure 1.
- ½ inch Wooden Dowel
- Access to Clean Fresh Water Clean Rags/Paper Towels
- Mild Hand Washing Dish Soap or Simple Green®
- Latex or Rubber Gloves
- 3/8″ Nut Driver

Parts Included:

PART #	DESCRIPTION	QTY
510-008	O-ring	2
510-112	O-ring	6

PART #	DESCRIPTION	QTY
520-116	Silicone Oil Package	2
530-110	Locknut	2

VIDEO

How To: Kirby Morgan Sealed Pull Pin Overhaul Kit

https://www.youtube.com/watch?v=PyUgwvN_I9Y

⚠ CAUTION

Overhauling the Sealed Pull Pins requires the use of the proper tools and components. Only use the type of silicone oil contained in this kit. Do not substitute O-rings. The red silicone O-rings swell after contact with the silicone oil. The use of the silicone O-rings allows for better sealing than rubber compounds because the silicone rubber swells after being in contact with the silicone oil.

The P/N 505-110 Sealed Pull Pins used on KMDSI helmets work extremely well and have shown to be very reliable with only minimal maintenance. The reliability stems from the Pull Pins being filled with silicone oil and sealed with O-rings. The silicone oil allows smooth hydraulic operation while preventing sand and debris from

entering the sleeve. Under mild conditions the Pull Pins will operate for one to two years before the sliding surfaces start to wear the O-rings, allowing oil leakage to occur and eventually resulting in stiff operation. Diving in salt water with minimal rinsing, as well as welding, burning and especially jetting, will cause accelerated wear of the O-rings and possible corrosion of the Pull Pin components. Once the surface chrome on the pull knob has worn away due to corrosion /electrolysis, the Pull Pins will require disassembly and overhaul more frequently, usually every year to 18 months. If the Pull Pins have had water intrusion resulting in excessive corrosion of components, the effected components will need to be replaced. Until recently, overhaul of Pull Pins was only accomplished by KMDSI. This overhaul procedure was written to better serve the end user and guide KMDSI technicians in the overhaul of the Pull Pins. Technical questions regarding this procedure should be addressed to KMDSI or Dive Lab.

Pre and post dive inspections are recommended and will help with the detection of excessive wear or corrosion.

⚠ CAUTION

Use only KMDSI original replacement parts. The use of other manufacturers' parts will interfere with the performance characteristics of your life support equipment and may jeopardize your safety. Additionally, any substitutions will void any warranties offered by KMDSI. When ordering spares, always insist on Kirby Morgan Genuine Parts.

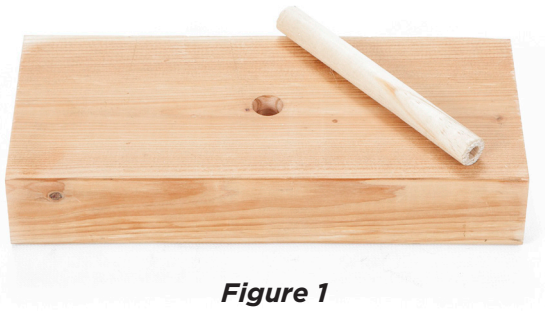

Figure 1

1) Drill a ½" diameter hole by ½" deep in the center of a 2" × 4" piece of wood approximately eight inches long and set aside. The 2" × 4" makes a good working base and helps keep the Pull Pin from moving during assembly.

2) Drill a ¼" diameter hole approximately ½" deep in one end of the wooden dowel. Make sure to drill this hole as close to the center of the dowel as possible. If the hole is drilled off center by too much, it may not align properly when it is needed to do so. The dowel is used to seat the P/N 510-008 O-ring in the Pull Pin knob. It is also useful when inserted in the hole in the 2" × 4" when filling the pull pin casing with oil.

Disassembly

NOTE

Sealed Pull Pins made prior to 2003 used a ¼" locknut. There is no reason other than putting an older helmet back into service where one would encounter a ¼" locknut.

Fiberglass helmet retaining screws are located on the top of the helmet ring. Stainless steel helmet retaining screws are located on the bottom of the helmet ring

Preparation: Dissembling the pull pin should be done over a large paper cup or suitable container to capture oil and associated parts of the pull pin.

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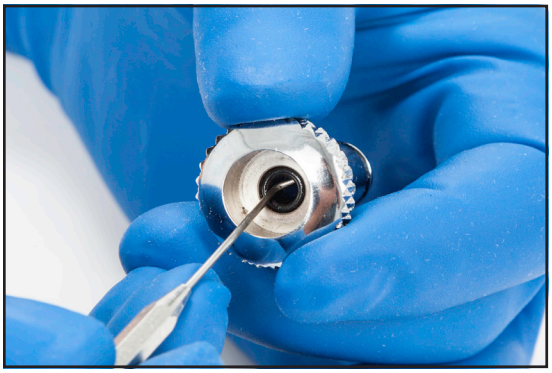
3) Using the 9⁄64″ Allen wrench remove Pull Pin retaining screw and remove the Pull Pin from the helmet ring.

4) Hold the knob (4) end of the pull pin while using the 3⁄8″ nut driver to loosen and remove the lock nut (1).

5) Pull the knob (4) free, then slide the plunger (8) free from the body (6).



6) Remove and separate all associated parts. Dispose of all three O-rings and locknut.

7) Clean all parts with a nylon brush using a solution of mild soap and water then thoroughly rinse with clean fresh water and dry. Clean inside of body with nylon brush to remove debris and corrosion.

8) Inspect the Pull Pin body (6), slide surfaces, knob (4), spring (7) and plunger (8) for corrosion damage.

NOTE

Corroded parts can be soaked in a solution of 5% percent white vinegar and water for up to one hour. Any parts showing damage from excessive corrosion that could weaken the component or not allow the O-rings to seal must be replaced. Additionally, if the threaded area on the piston is damaged the piston should be replaced.

Reassembly and Filling

NOTE

New silicone sealing O-rings must be used on the piston and knob. O-rings that have been in contact with silicone oil become very soft and will usually tear or chip during assembly, if attempting to re-use them. Always replace these O-rings when rebuilding this assembly.

DO NOT PRE-LUBRICATE THE O-RINGS

1) Install the two new red O-rings (5), one on the plunger (8), one on the knob (4) and set aside.

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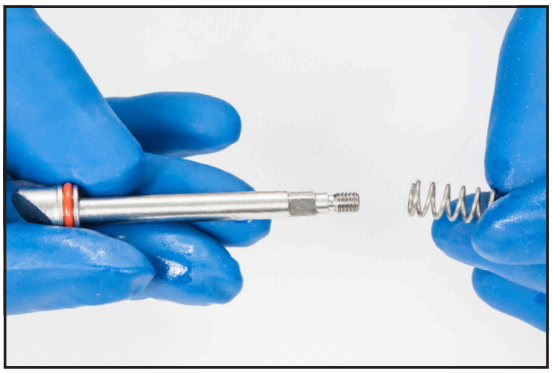

2) Slide spring (7) onto plunger (8) and set aside.

3) Carefully install the knob (4) into the body (6), making sure not to pinch the O-ring. Ensure the index tab on the knob aligns with the recess on the body (6).

4) Orient the pull pin body so the index is facing you. With one finger on the knob (4) and the spring on the plunger (8), place the plunger assembly into the body (6) so that you can see the beveled end of the plunger. It will be in line with the index recess.

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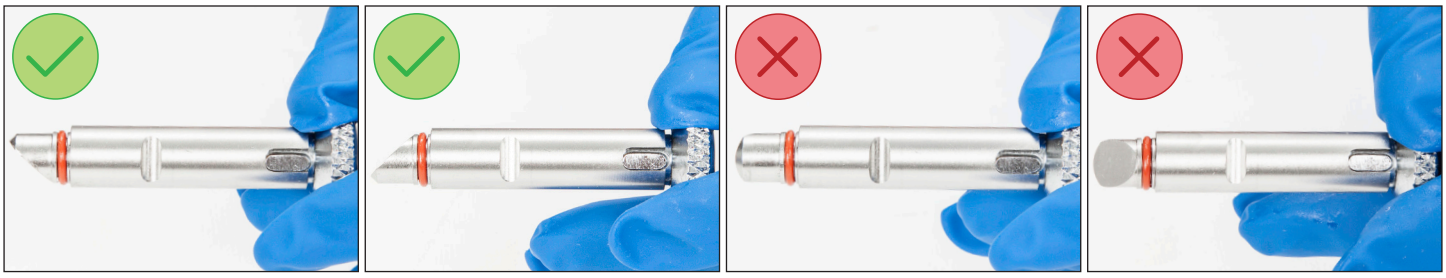
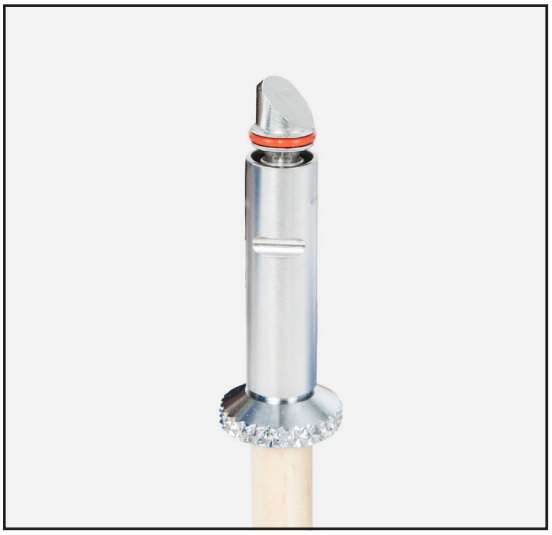


5) Place the black O-ring (3) over the threaded plunger and using the dowel with the hole, press the O-ring into the knob recess around the threaded plunger. Ensure the black O-ring is in the recess formed by the threaded plunger and the groove in the pull knob. The threaded plunger protrudes just enough to get the nut on the threaded shaft approximately one turn.

NOTE

Thread the nut about one turn so the knob end is sealed for filling with oil. This creates a small gap between the body and plunger on the opposite end, allowing for filling with the oil package. The washer (2) will not be used at this time.

6) **Preparation:** Insert the wooden dowel (hole end up) into the hole found on the 2″ × 4″.



7) Orient the pull pin body so the index is facing you. With one finger on the knob (4) and the spring on the plunger (8), place the plunger assembly into the body (6) so that you can see the beveled end of the plunger. It will be in line with the index recess.

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8) Fill the Pull Pin with oil from the plunger end, using one package of oil and stopping before the top of the Pull Pin body. The other package of oil will be used for the second Pull Pin.

9) Slightly push down on the beveled end of the plunger as you lift the assembly away from the wooden dowel. Keep the Pull Pin in a vertical orientation.

10) Using the ⅜" nut driver, slowly tighten the nut and draw the O-ring at the beveled end into the body. The red O-ring will no longer be visible.

11) Keep one finger on the plunger end while turning the pull pin 180 degrees so the knob (8) is now at the top and the plunger at the bottom positions.

12) Remove lock nut using ⅜" nut driver and install washer (2).

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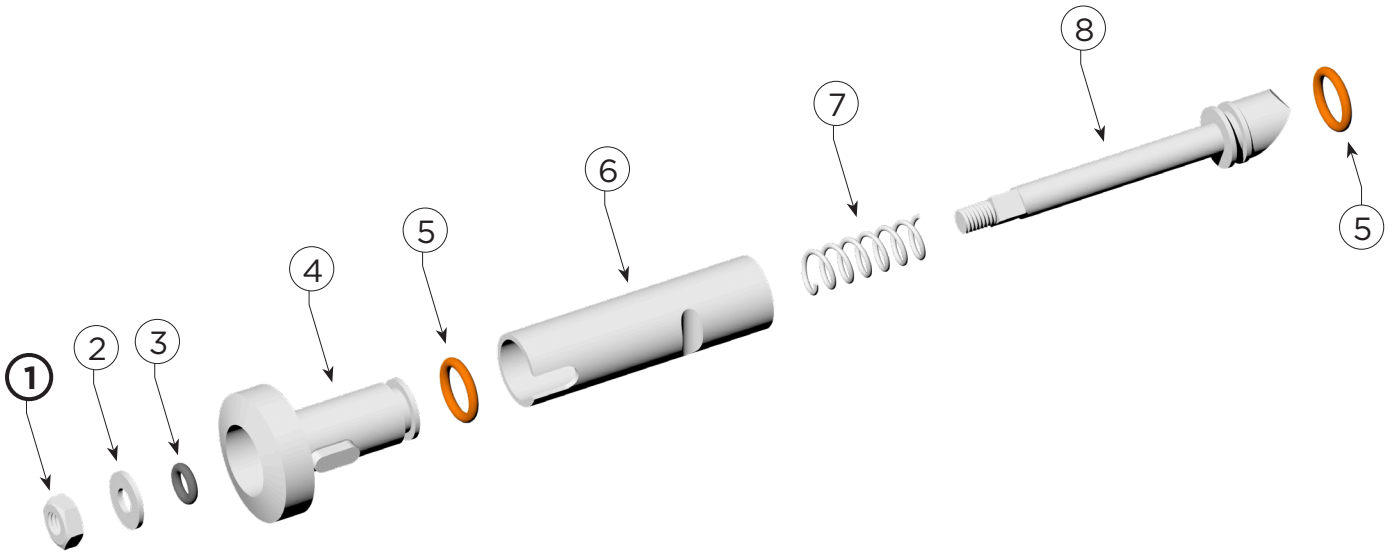
13) Place lock nut back onto threaded end of plunger and use the ⅜" nut driver to tighten until nut bottoms out.

14) Wipe any excess oil from the Pull Pin and test the Pull Pin to ensure the pin moves smoothly and does not bind. If the Pull Pin does not pull out smoothly and does not snap back when released, disassemble, inspect all parts and try again until proper operation is achieved.

15) Reinstall Pull Pin into the helmet. Tighten the Allen screw into the bottom ring and tighten until it is just flush and has bottomed in the counter bore. If the original screws are being reused apply a small amount of Loctite® 248 onto the ends of the screws.



LOC #	PART #	DESCRIPTION
1	530-110	Locknut
2	330-510	Washer
3	510-008	O-ring
4	550-236	Knob

LOC #	PART #	DESCRIPTION
5	510-112	O-ring
6	550-238	Body
7	535-815	Spring
8	550-240	Plunger

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