

## **SPEED INCREASER ASSEMBLY**

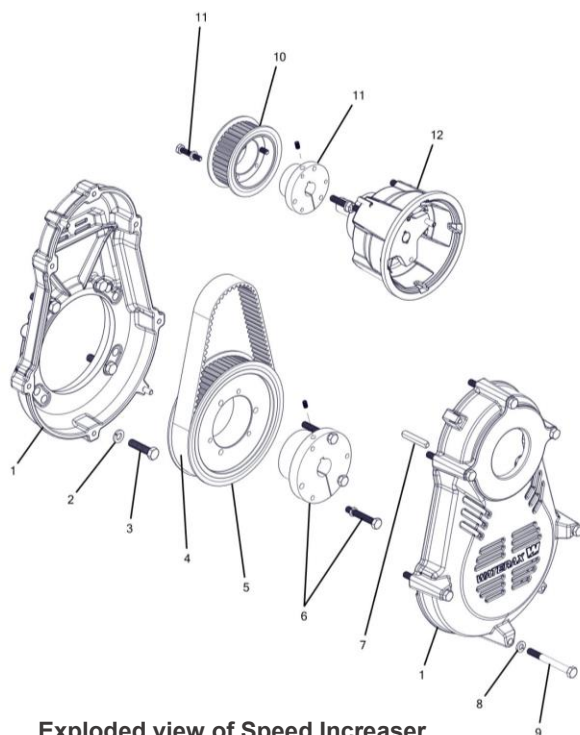
### **USER INSTRUCTIONS**

#### **Overview**

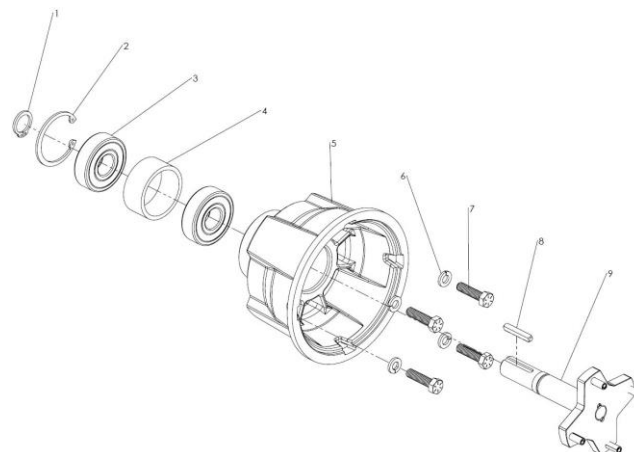
The User Instructions covers the installation of the WATERAX speed increaser assembly. The Speed Increaser is currently used on the following product series: BB-4®, B2X™ and STRIKER.



## Parts Breakdown



Exploded view of Speed Increaser



Exploded view of drive hub assembly

ID	ITEM NO	DESCRIPTION	QTY
--	600070	C-7220 SPEED INCREASER ASSEMBLY, ALU. PAINTED	--
1	701670	SPEED INCREASER PAINTED	1
2	800512	FAST-502 LOCKWASHER 3/8 SPLIT ZINC	4
3	800485	FAST-524 SCREW 3/8-16X1-1/2 HEX CAP ZINC	4
4	800803	PART-1 TIMING BELT, 8MMP X 30W X 720LG	1
5	800825	PART-2 PULLEY 64T X 8MM P X 30MM W	1
6	801011	PART-4 BUSHING FOR 1" SHAFT	1
	801264*	BUSHING FOR 1-1/8" SHAFT SK	1
	801234**	BUSHING FOR 1-7/16" SHAFT SK W/HARDWARE	1
7	600176	PART-7 KEY 1/4"SQUARE, S.S.	1
8	800513	FAST-501 LOCKWASHER 5/16 SPLIT ZINC	6
9	800534	FAST-1 SCREW 5/16-18X3 HEX CAP ZINC DICHROMATE	6
10	800856	PART-3 PULLEY 34T X 8MM P X 30MM W	1
11	800852	PART-5 BUSHING FOR 3/4" SHAFT	1
12	600633	DRIVE CARRIER ASSEMBLY COMPLETE	1

\* The bushing is available for engine with 1-1/8" shaft

\*\* The bushing comes in the diesel pump end kits

ID	ITEM NO	DESCRIPTION	QTY
--	600633	DRIVE CARRIER ASSEMBLY COMPLETE	--
1	800538	PART-8 RETAINING RING EXT..	1
2	800541	PART-9 RETAINING RING INT.	1
3	800836	PART-10 BEARING, 4 POINT CONTACT, SEALED	2
4	700083	A-6956 SPACER FOR C-7220, ALU.	1
5	701672	SPEED INCREASER HUB PAINTED	1
6	800513	FAST-501 LOCKWASHER 5/16 SPLIT ZINC	4
7	701907	SCREW 5/16-18X1-1/4 HEX CAP FULL THREAD ZINC	4
8	600151	PART-6 KEY 3/16" SQUARE, S.S.	1
9	700086	A-7239 SHAFT ASSEMBLY FOR C-7220	1

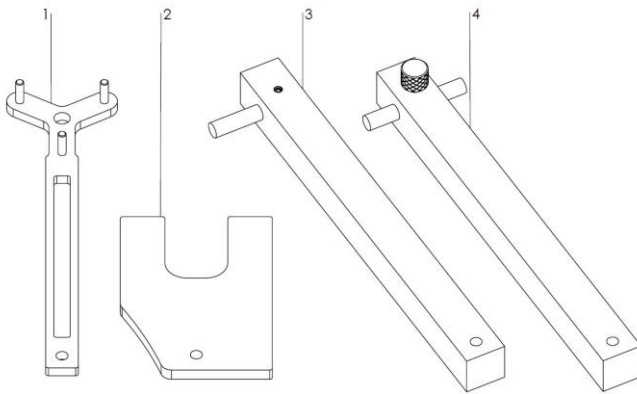
## Installing the Speed Increaser

### Before Installation

- Read and follow all instructions thoroughly and carefully.
- Ensure shaft, bores, screws, etc. are free of burrs and lubricant.

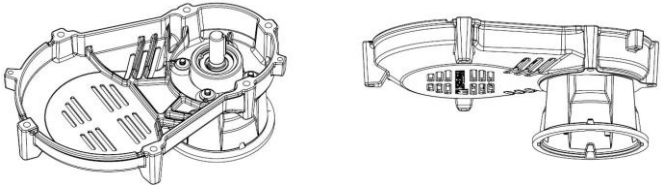
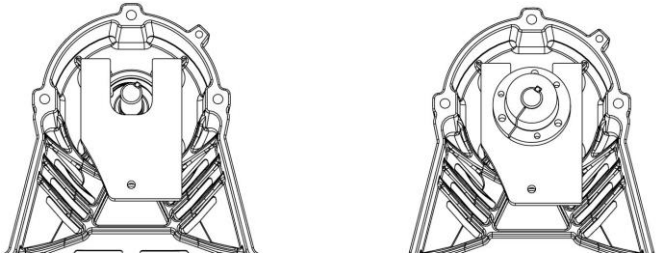
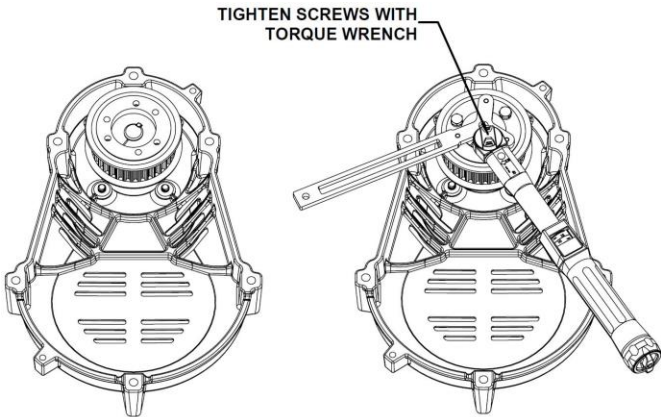
### Tools and Materials Required

- Torque wrench
- SAE Socket wrench with the following sockets to be used on the drive box cap screws and bushing cap screws:
  - 7/16"
  - 1/2"
  - 9/16"
- SAE Allen keys to be used on the bushing set screws:
  - 1/8" or 3/32"
  - 5/32"
- Medium strength thread locker solution (e.g. Loctite® 243)
- Speed Increaser tools:



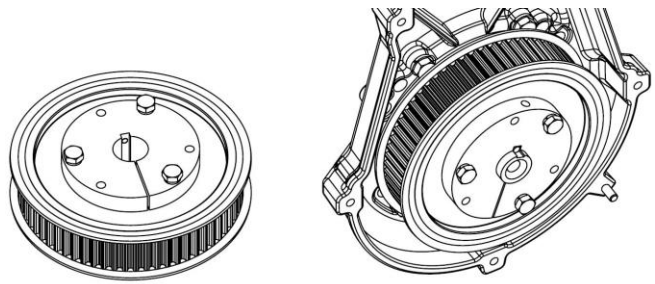
ID	ITEM NO	DESCRIPTION	QTY
1	600617	SPEED INCREASER SPROCKET HOLDING TOOL	1
2	600620	SPEED INCREASER POSITIONING TOOL - DRIVEN	1
3	600619	SPEED INCREASER POSITIONING TOOL - DRIVER	1
4	600618	SPEED INCREASER VERIFICATION TOOL	1

## Driven Sprocket

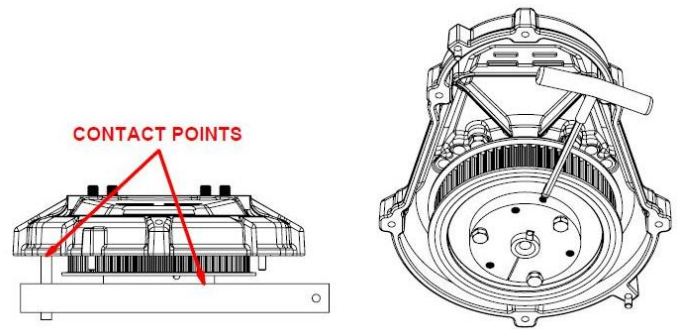
<ol style="list-style-type: none"> <li>1. Install the Drive Hub Assembly (<b>600633</b>) onto the front cover of the Speed Increaser.</li> </ol>	
<ol style="list-style-type: none"> <li>2. Use the DRIVE ASSY POSITIONING TOOL - DRIVEN (<b>600620</b>) to position the driven bushing onto the shaft. The bushing shoulder should sit flush on the positioning tool. Insert the key. Make sure the key runs the entire length of the bushing bore.</li> <li>3. Apply medium-strength Loctite® 243 on the set screw. Install and <b>hand tighten only</b>. This will lock the bushing position.</li> </ol>	
<ol style="list-style-type: none"> <li>4. Slide out the DRIVE ASSY POSITIONING TOOL - DRIVEN.</li> <li>5. Install the Driven Sprocket onto the bushing. Align the non-threaded holes of the sprocket with the threaded holes of the bushing.</li> <li>6. Use a torque wrench to gradually tighten the cap screws with lock washers sequentially until each is tightened to <b>108 in-lbs</b>. When the cap screw is at the recommended torque value, make at least two more sequential rounds to ensure all cap screws are at the adequate torque value. Use the DRIVE ASSY SPROCKET HOLDING TOOL (<b>600617</b>) to prevent the sprocket from turning while torqueing the screws.</li> </ol>	

## Driver Sprocket

7. Align the non-threaded holes of the bushing to the threaded holes of the driver sprocket. Insert the cap screws into the threaded holes of the pulley and turn them by hand three to four turns.
8. Put the bushing and driver sprocket on the shaft and align the keyways.
9. Insert the key. Make sure the key runs the entire length of the bushing bore.



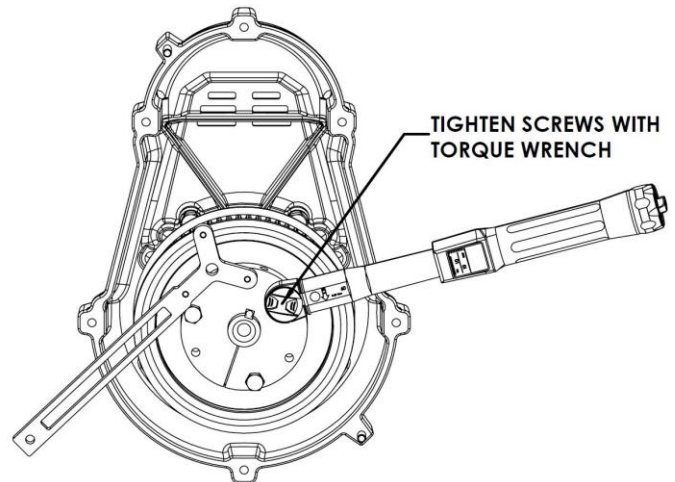
10. Use the DRIVE ASSY POSITIONING TOOL - DRIVER (600619) to position the sprocket and bushing.  
**Note:** If reinstalling the sprocket, the mechanic may need to do minor adjustments. To help keep the position of the sprocket and bushing correct, make a mark on the engine shaft where the bushing and shaft meet. This is where the bushing and sprocket must be once tightened.
11. Apply medium strength thread locker such as Loctite® 243 on the set screw. Install and **hand tighten only**. This will lock the bushing position.



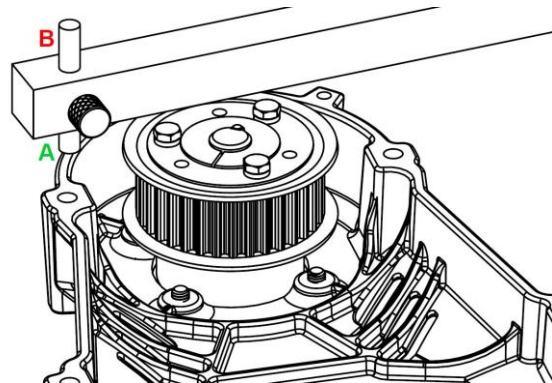
12. Using a torque wrench and the appropriate socket, tighten the cap screws with lock washers sequentially until each is tightened to **180 in-lbs**.

You can use the Sprocket Holding Tool to keep the sprocket from turning while tightening the screws. You can also use the rewind starter (when available) to lock the engine shaft.

When the cap screw is at the recommended torque value, make at least two more sequential rounds to ensure all cap screws are at the adequate torque value.



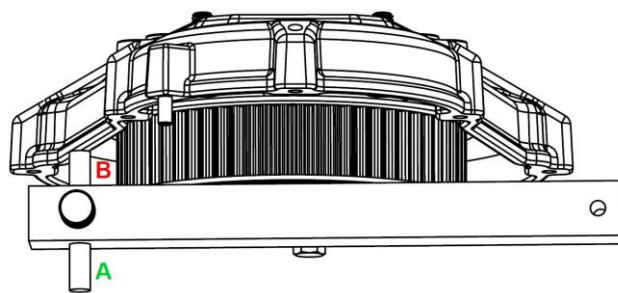
13. Use the DRIVE ASSY VERIFICATION TOOL (600618) to make sure the two sprockets are at the correct position. Position the Verification Tool on top of the driven sprocket. Loosen the thumb screw and push the "A" side of the pin until it touches the front cover lip of the Speed Increaser. Tighten the thumb screw.





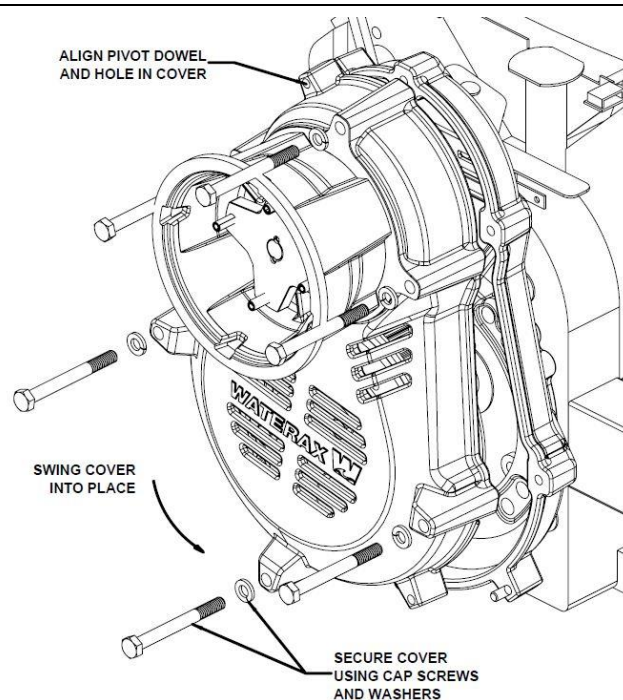
14. Place the Verification Tool onto the Driver Sprocket and check if the “**B**” side of the pin touches the back cover; that position is good. There is a play of up to 1/16”.

If the pin exceeds or comes short of the cover by more than 1/16”, note the distance on the engine shaft and bushing, remove and re-install the bushing and pulley assembly using the above steps.



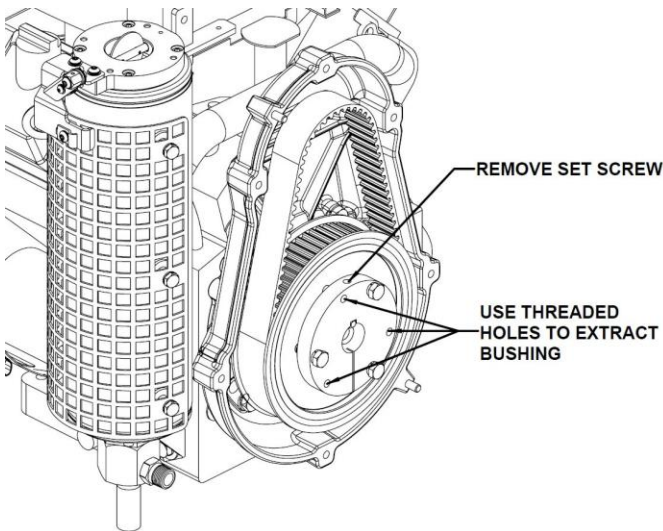
### **Belt & Front Cover**

15. To install the front cover, loop the timing belt around the small driven sprocket. Make sure the timing belt is seated properly on the sprockets.
16. Align the top dowel pin with the corresponding hole on the front cover, and partially insert the front cover onto the dowel pin.
17. Using the top dowel pin as a pivot point, swing the front cover and align the second dowel pin with the corresponding hole.
18. Insert the front cover fully onto the dowel pins and flat against the back-cover mating surface.
19. Fasten the front cover and the rear cover using the six cap screws and lock washers. To help seat the cover properly, tighten the top screw, then the bottom screw, and then alternate the screws on either side, crisscrossing the cover. Securely tighten.

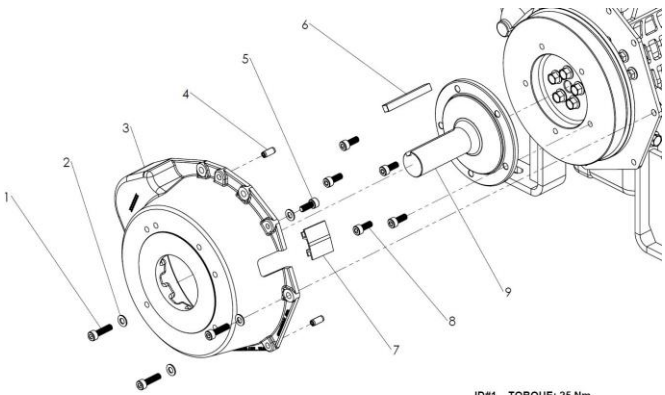


### Removal of Sprocket Assembly

- 1. Remove all the cap screws sequentially.
- 2. Remove the set screw.
- 3. For the large driver sprocket, insert the cap screws into the threaded holes of the bushing. For the small driven sprocket, insert the cap screws into the threaded holes of the sprocket.
- 4. Tighten the cap screws against the face until the screw force releases the sprocket from the bushing.



### Parts Breakdown of BB-4-D902 Stub Shaft and Engine Housing



ID#1 TORQUE: 25 Nm  
ID#5: TORQUE: 25 Nm  
ID#7: APPLY LOCTITE 243  
TORQUE: 35 Nm

ID	ITEM NO	DESCRIPTION	QTY
1	600572-2**	SCREW M8 X 30 HEX SOCKET	3
2	600572-1**	FLAT WASHER M8	4
3	600572	BELL HOUSING K106 ALU SAE "A" PILOT, HARDWARE INCL	1
4	600572-3**	GUIDING PIN	2
5	600572-5**	SCREW M8 X 20 HEX SOCKET	1
6	600582	KEY 3/8" SQUARE X 3-1/4" LG, STEEL	1
7	600572-4**	PROTECTIVE COVER	1
8	600571-1*	SCREW M8 X 20 HEX SOCKET	5
9	600571	STUB SHAFT FORGED K106 1-7/16 X 5, HARDWARE INCL.	1

\* Parts come included in kit 600571

\*\* Parts come included in kit 600572

# **WATERAX**

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To help you stay **#ReadyForWildfires**, we've made a few changes, placing 100% of our focus on manufacturing our core products, portable fire pumps.

To do so, we've established a network of trusted supply and distribution partners that can help us provide *WATERAX* pumps quickly in addition to water-handling equipment and accessories.

For immediate assistance when it comes to pumps and water-handling accessories, please [contact your local dealer](#).

For genuine spare parts, visit our [online store](#).

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