

BB-4®/B2X™/STRIKER Speed increaser

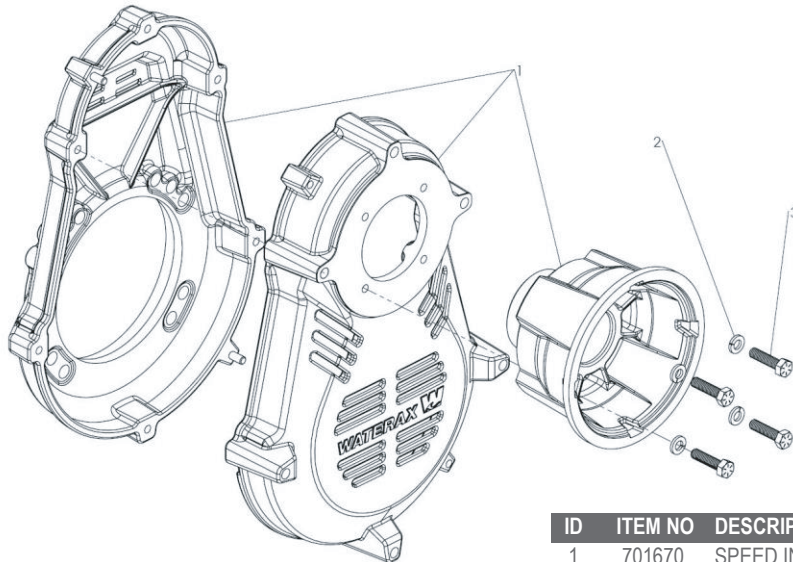
TECH-NOTE

Overview:

WATERAX has made changes to the Speed Increaser Housing in order to facilitate the installation of the Speed Increaser Assembly as well as to simplify its maintenance. Users will now be able to choose to mount the new and improved speed increaser either vertically or horizontally whereas previously it could not be converted. This tech-note will list the new parts and highlight the key benefits.

The Speed Increaser is currently used on the following product series: BB-4®, B2X®, STRIKER®.

Parts Breakdown:



ID	ITEM NO	DESCRIPTION	QTY
1	701670	SPEED INCREASER HOUSING PAINTED	1
2	800513	FAST-501 LOCKWASHER 5/16 SPLIT ZINC	4
3	701907	SCREW 5/16-18X1-1/4 HEX CAP FULL THREAD ZINC	4



600070: C-7220 SPEED
INCREASER ASSEMBLY

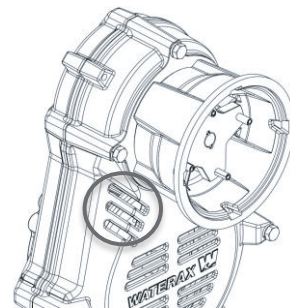
It is important to note that the three above components cannot be individually interchanged with their previous versions; the new housing halves are only compatible with each other and with the new drive hub housing. The lock washers and screws have also been changed. All other Speed Increaser Assembly internal components remain unchanged.

TECH-NOTE

Benefits:

Belt Inspection Slots

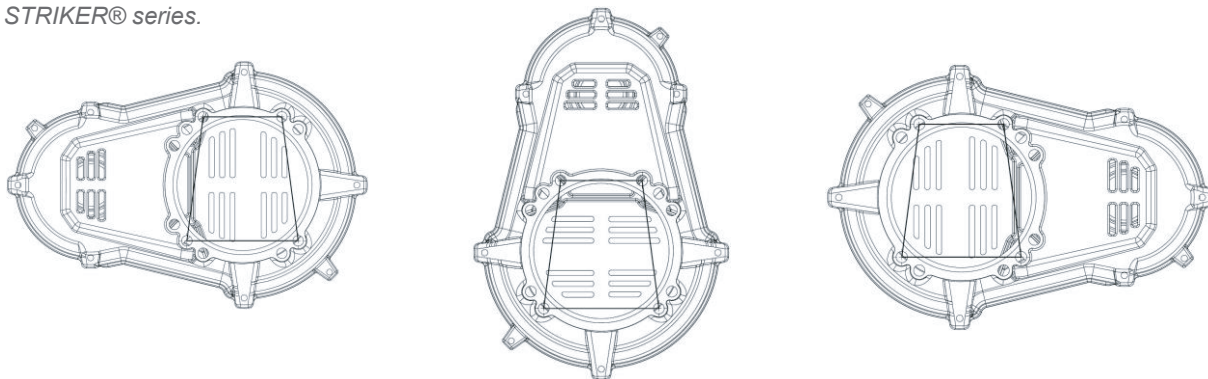
Slots were added to the Speed Increaser Housing to provide a visual indicator to anticipate belt maintenance. Such an inspection was previously only possible by disassembling the drive box cover.



Vertical and Horizontal Configurations Bolt Pattern

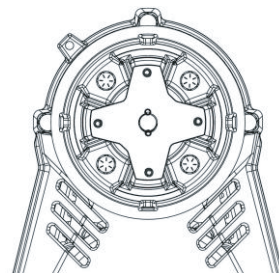
The rear casing now has an integrated horizontal configuration bolt pattern. Users no longer need a transfer plate to mount the speed increaser horizontally.

Please note that the speed increaser cannot be installed horizontally on the STRIKER® series.



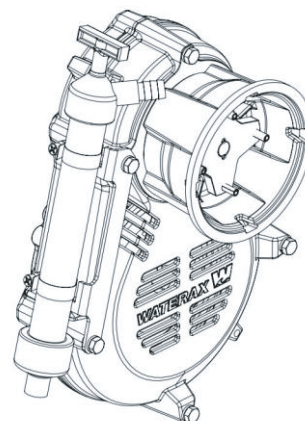
Assembly Simplification

The 3/8-16 screws used to mount the hub have been replaced with 5/16-18 screws. The screws have also been repositioned to provide better tool access.



Simpler Hand Primer Mounting (STRIKER® Series)

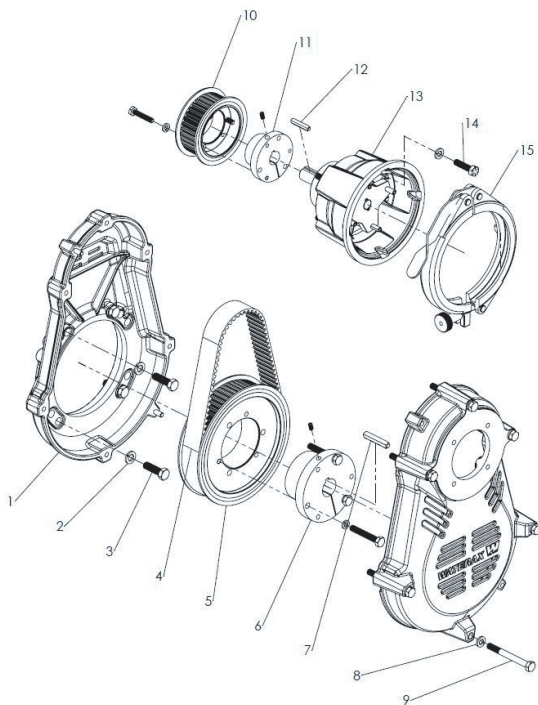
The hand primer now mounts with a new bracket that does not require to drill and tap into the Speed Increaser.



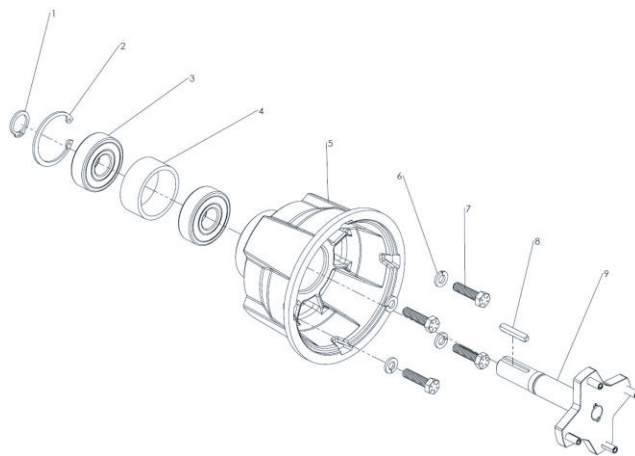
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TECH-NOTE

NEW Speed In increaser Parts Breakdown:



Exploded view of Speed In 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	10
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	600151	PART-6 KEY 3/16" SQUARE, S.S.	1
13	600633	DRIVE CARRIER ASSEMBLY COMPLETE	1
14	701907***	SCREW 5/16-18X1-1/4 HEX CAP FULL THREAD ZINC	4
15	600063	212-170P CLAMP ASSEMBLY, ALU. PAINTED	1

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

** The bushing comes in the diesel pump end kits

***The parts are included in the drive hub assembly (600633)

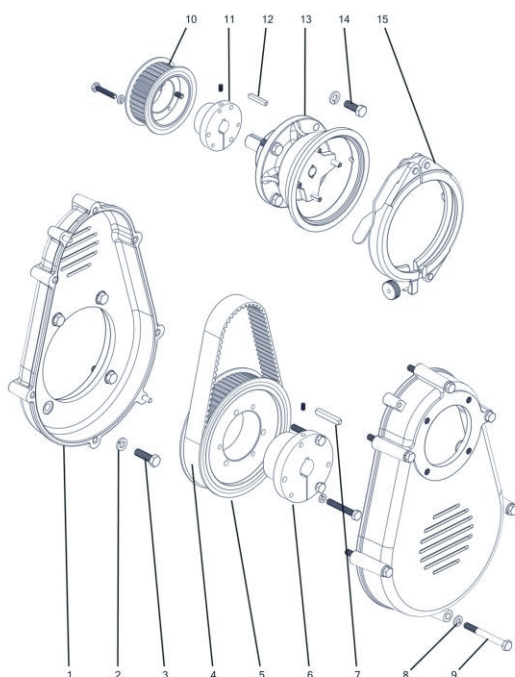
ID	ITEM NO	DESCRIPTION	QTY
--	600633	DRIVE CARRIER ASSEMBLY COMPLETE	--
1	800538	PART-8 RETAINING RING EXT..	1
2	800541	PART-9 RETAINING RING INT.	1
3	800836	PART-10 BEARING, 4 POINT CONTACT, SEALED	2
4	700083	A-6956 SPACER FOR C-7220, ALU.	1
5	701672	SPEED INCREASER HUB PAINTED	1
6	800513	FAST-501 LOCKWASHER 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



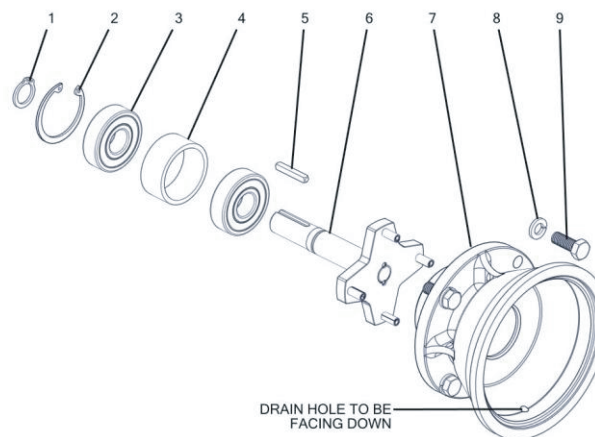
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TECH-NOTE

OLD Speed Increaser 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
1	600101	C-7221 SPEED INCREASER HOUSING, ALU. PAINTED	1
2	800512	FAST-502 LOCKWASHER 3/8 SPLIT ZINC	8
3	800524	FAST-23 SCREW 3/8-16X1-1/4 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	600151***	PART-6 KEY 3/16" SQUARE, S.S.	1
13	600124	B-7544 DRIVE CARRIER ASSEMBLY COMPLETE	1
14	800527***	FAST-2 SCREW 3/8-16X1 HEX CAP ZINC DICHROMATE	4
15	600063	212-170P CLAMP ASSEMBLY, ALU. PAINTED	1

ID	ITEM NO	DESCRIPTION	QTY
--	600124	B-7544 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	600151	PART-6 KEY 3/16" SQUARE, SS	1
6	700086	A-7239 SHAFT ASSEMBLY FOR C-7220	1
7	600130	C-6955 FLANGE FOR DRIVE HUB ONLY, ALU.	1
8	800512	FAST-502 LOCKWASHER 3/8 SPLIT ZINC	4
9	800527	FAST-2 SCREW 3/8-16X1 HEX CAP ZINC DICHROMATE	4

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

** The bushing comes in the diesel pump end kits

***The parts included in the drive hub assembly (600124)



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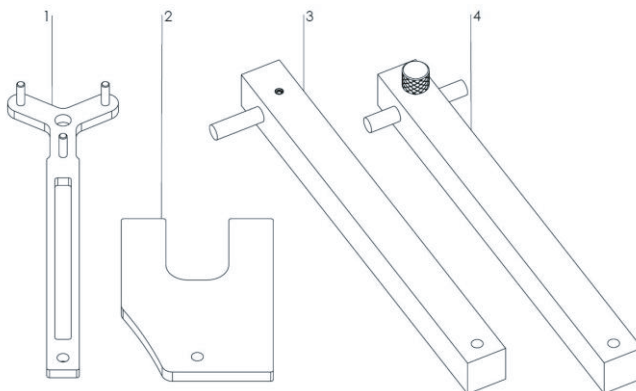
Installing the Speed Increaser:

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

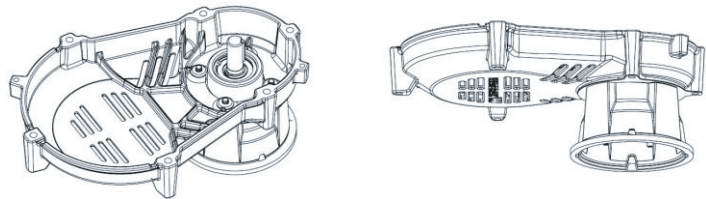
- Torque wrench
- SAE Socket wrench with the following sockets to be used on the drive box cap screws and bushing cap screws:
 - 7/16"
 - 1/2"
 - 9/16"
- SAE Allen keys to be used on the bushing set screws:
 - 1/8" or 3/32"
 - 5/32"
- Medium strength thread locker solution (e.g. Loctite® 243)
- Speed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

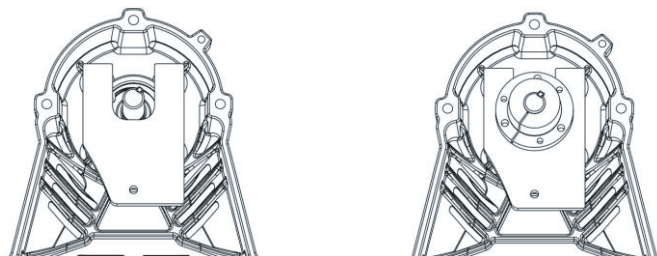
Procedure

1. Install the Drive Hub Assembly (**600124**) onto the front cover of the Speed Increaser.

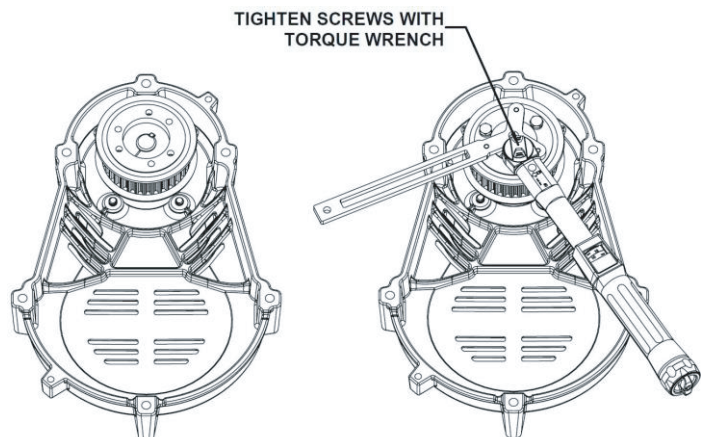


DRIVEN SPROCKET

2. Use the DRIVE ASSY POSITIONING TOOL - DRIVEN (**600620**) 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.
3. Apply medium-strength Loctite® 243 on the set screw. Install and **hand tighten only**. This will lock the bushing position.
4. Slide out the DRIVE ASSY POSITIONING TOOL – DRIVEN.
5. Install the Driven Sprocket onto the bushing. Align the non-threaded holes of the sprocket with the threaded holes of the bushing.

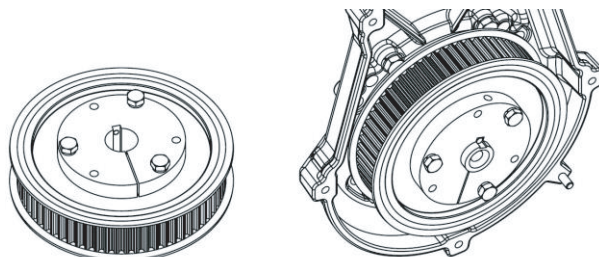


Use a torque wrench to gradually tighten the cap screws with lock washers sequentially until each is tightened to **108 in-lbs**. When the cap screw is at the recommended torque value, make at least two more sequential rounds to ensure all cap screws are at the adequate torque value. Use the DRIVE ASSY SPROCKET HOLDING TOOL (**600617**) to prevent the sprocket from turning while torqueing the screws.



DRIVER SPROCKET

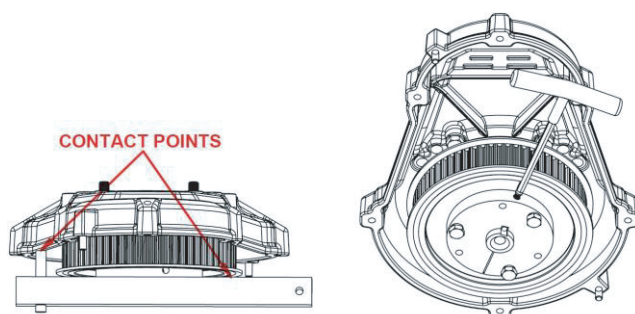
6. Align the non-threaded holes of the bushing to the threaded holes of the driver sprocket. Insert the cap screws into the threaded holes of the pulley and turn them by hand three to four turns.
7. Put the bushing and driver sprocket on the shaft and align the keyways.
8. Insert the key. Make sure the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



9. Use the DRIVE ASSY POSITIONING TOOL - DRIVER (600619) to position the sprocket and bushing.

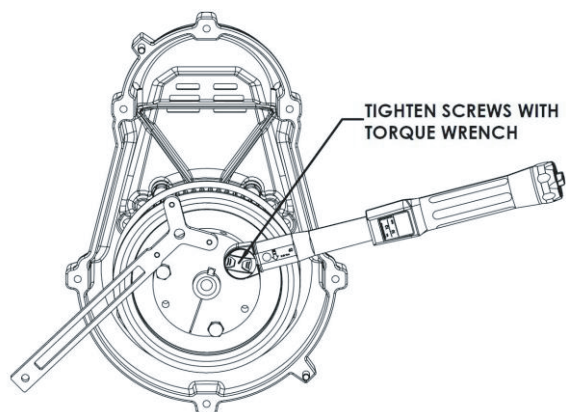
Note: If reinstalling the sprocket, the mechanic may need to do minor adjustments. To help keep the position of the sprocket and bushing correct, make a mark on the engine shaft where the bushing and shaft meet. This is where the bushing and sprocket must be once tightened.

10. Apply medium strength thread locker such as Loctite® 243 on the set screw. Install and **hand tighten only**. This will lock the bushing position.



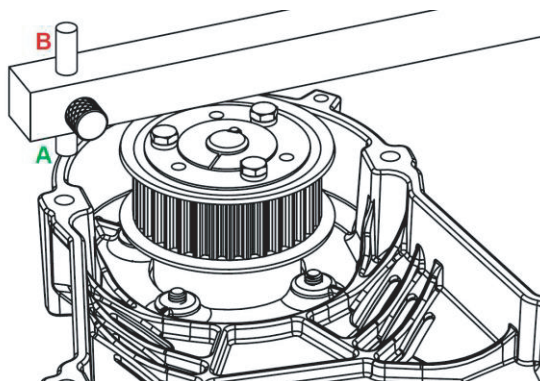
11. Using a torque wrench and the appropriate socket, tighten the cap screws with lock washers sequentially until each is tightened to **180 in-lbs**. You can use the Sprocket Holding Tool to keep the sprocket from turning while tightening the screws. You can also use the rewind starter (when available) 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.

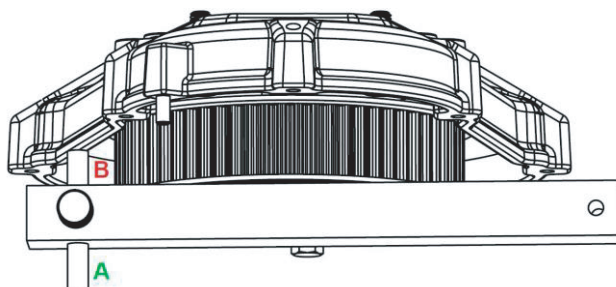


TECH-NOTE

12. 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 Seed Increaser. Tighten the thumb screw.

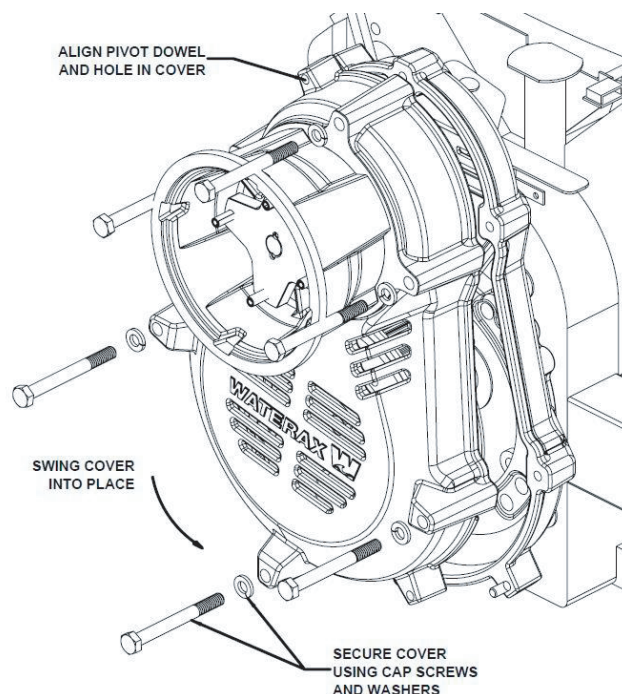


13. Place the Verification Tool onto the Driver Sprocket and check if the "B" side of the pin touches the back cover; that position is good. There is a play of up to 1/16". If the pin exceeds or comes short of the cover by more than 1/16", note the distance on the engine shaft and bushing, remove and re-install the bushing and pulley assembly using the above steps.



BELT & FRONT COVER

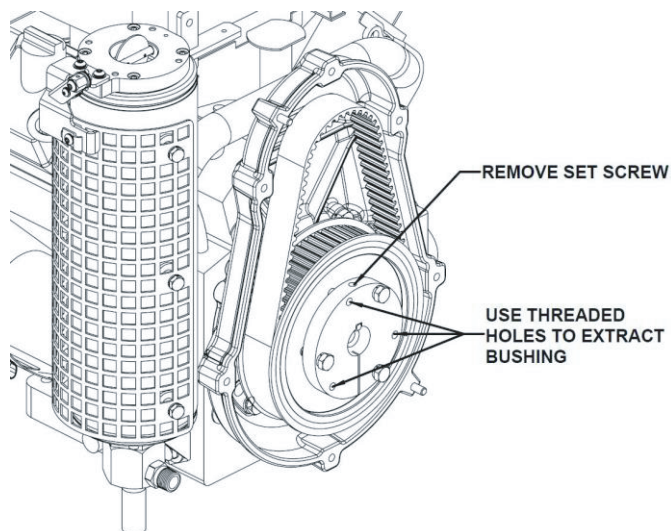
14. To install the front cover, loop the timing belt around the small driven sprocket. Make sure the timing belt is seated properly on the sprockets.
15. Align the top dowel pin with the corresponding hole on the front cover, and partially insert the front cover onto the dowel pin.
16. Using the top dowel pin as a pivot point, swing the front cover and align the second dowel pin with the corresponding hole.
17. Insert the front cover fully onto the dowel pins and flat against the back-cover mating surface.
18. 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.



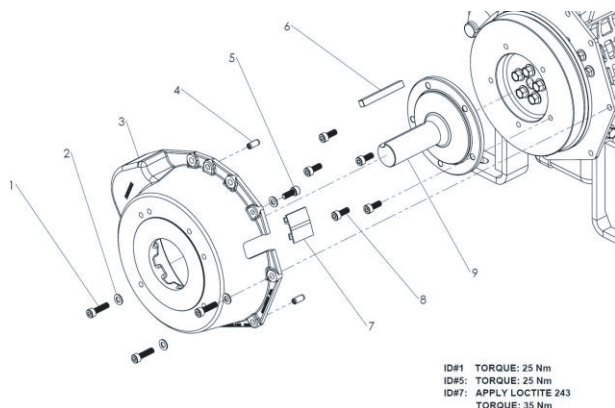
TECH-NOTE

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.



Assembly of BB-4-D902 Stub Shaft and Engine Housing



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

Warranty, Service and Support:

Product and service documentation such as tech notes, data sheets, manuals and information on the limited warranty provided on products manufactured by *WATERAX* can be found on our Web site at: www.waterax.com.



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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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