INSTALLATION - SERVICE INSTRUCTIONS

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Bulletin NO. SB0115
PAGE 1 OF 9
APRIL 2021

Part Numbers:

50230-KIT.....Axle, Corvette Next-Step 31 spline spindle for C2-C3, circa: ‘63-’82

Parts Included:

See the parts list on page 2 or page 6 for all the items included in the kit. The kit has all the parts required including Timken® bearings and SKF-CR seals.

Assembly Features:

This kit improves the yoke-shaft torsion capability by improving the stock 17 spline to a more modern and stronger 31 tooth involute profile. The axle flange (spindle), is produced from a 4340 aircraft alloy forging that utilizes a double heat-treat process and features shot peening for improved cycle life. The universal joint yoke replaces the two parts of the original design, eliminating the 4-bolt flange. The splined yoke is through hardened steel and features removable heat-treated billet caps that simplify the installation. The universal joint cap is attached with ARP fasteners and is drilled for safety wire locking. The axle-shaft features a 1”-20 thread that increases the assembled strength. The axle comes with installed 1/2”-20 x 3" ARP wheel studs that feature a nut-aligning quick start. They are installed with a threaded connection into the axle flange. There is a second pattern, 5/16”-18 thread 5 hole, for holding the brake disc tight against the axle when removing the wheels.The kit comes with all the parts required for assembly including Timken® bearings and SKF-CR seals.

Primary Applications: High performance street and road race applications for the C2 and C3 Chevrolet Corvettes.

Installation Overview: The assembly is designed to be a bolt-in conversion replacement for the original 17 spline axle (spindle) and bolt on universal flange. The kit includes bearings, seals, and a solid-pre-load shim that is over-length. The pre-load shim is intended to be machined to the proper length to precisesly control the tapered roller bearing pre-load. The splined yoke features removable caps that simplify the installation. We recommend setting the bearing preload without the seal being installed. Step by step instructions are on pages 3 - 6.

Torque Specs:

The wheel stud-bolts are factory installed with #621 Loctite and torqued to 110 foot-pounds. If the wheel stud bolts should require removal, pre-heat the flange with a heat gun to soften the locking compound prior to removing. The 1”-20 flange nut (#21, pg. 2) is a distorted self-locking type. We recoment using Loctite retaining compound in addition to the coating in the nut. We supply an extra flange nut with red paint that has the locking feature removed. Use the non-locking nut for the trial assembly and setting the spacer length for the proper preload. A hardened washer (#9, pg.2) is used between the u-joint flange and the nut. Torque to 240 foot-pounds. Set the preload without the seals before the final assembly process. Torque the 50226-1 U-Joint billet cap 5/16”-24 12-point bolts (#16, pg. 2) to 17-20 foot-pounds. Caution, over torquing will cause damage to the u-joint and will bind roller bearings and cause failure. We recommend using safety wire on the u-joint cap bolts.

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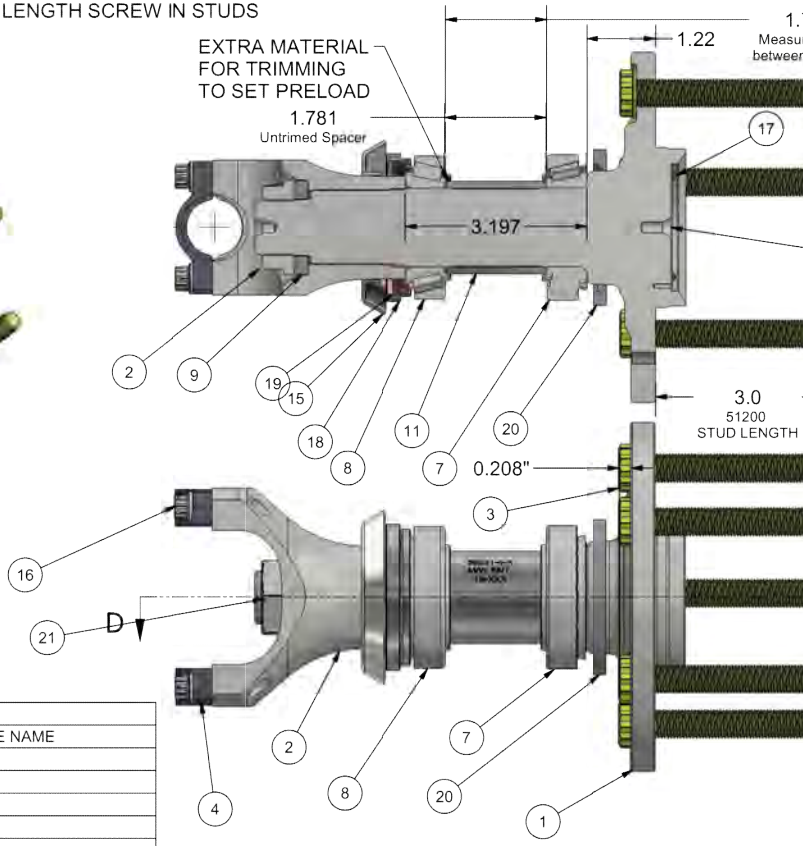
Revision notes: Axles produced after 7-20-20 have the press-in stud hole changed to a 5/8-18 thread for screw in stud. The cotter key hole for the 1"-20 axle thread nut is removed as the nut is retained with Red LockTite and distorted nut feature

AVAILABLE WITH 1/2"-20 X 3-1/4" THREAD LENGTH (SHOWN) OR 1/2"-20 X 2.0" THREAD LENGTH SCREW IN STUDS

5/16-18 THREAD HOLES ON 4-5/8" PATTERN FOR SECURING BRAKE DISC.

REVISION HISTORY		
A	1/28/2021	WAS 4.75 X 5 HOLE PATTERI



Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION	FILE NAME
1	1	50235	AXLE, CORVETTE 31 SPLINE	004871IN.ipt
2	1	50231	YOKE, CORVETTE AXLE 31 SPLINE 1350 JOINT	004869IN.ipt
3	5	51200-1	BOLT, 1/2-20 X 3 WHEEL STUD (ARP-MW)	51200-1.ipt
4	2	50237-1	CAP, CORVETTE AXLE YOKE FOR (50231-50232)	004872IN.ipt
6	5	AN960-816	WASHER, 1/2" AIRCRAFT	AN960-816.ipt
7	1	LM48548-LM48510	LM48548 - LM 48510 TS BEARING ASSEMBLY	LM48548-LM48510.ipt
8	1	LM48548-LM48510X	LM48548 - LM 48510X TS BEARING TRIMED	LM48548-LM48510(trimed).ipt
9	1	50231-3	WASHER. 50231 YOKE CORVETTE YOKE	004879IN.ipt
11	1	50231-4	SPACER, PRELOAD 50235 CORVETTE AXLE	004888IN.ipt
14	1	NPF	AXLE NAME PLATE, FORD 2.25 DIA	NPF.ipt
15	1	004915IN	SHIELD, DEFLECTOR FOR 50231 YOKE	004915IN.ipt
16	4	215.05.13.6NF	BOLT, 12 POINT 5/16-24 X .85" LG A.R.P	215.05.13.6NF.ipt
17	3	16101608	DRIVE SCREW, 3/32	16101608.ipt
18	1	50231-6	SHIM, INBOARD SEAL ADAPTOR	004890IN.ipt
19	1	17914 2.362X1.811X.376	CR SEAL CORVETT OUTER WHEEL	17914 2.362X1.811X.376.IPT
20	1	19803 2.754X2.00X.234	CR SEAL1.5 X 1.125 X .188	19803 2.754X2.00X.234.IPT
21	1	16-74-101	NUT, 1"-20 FLANGE LOCKING	16-74-101.ipt

SHEET 1 PI

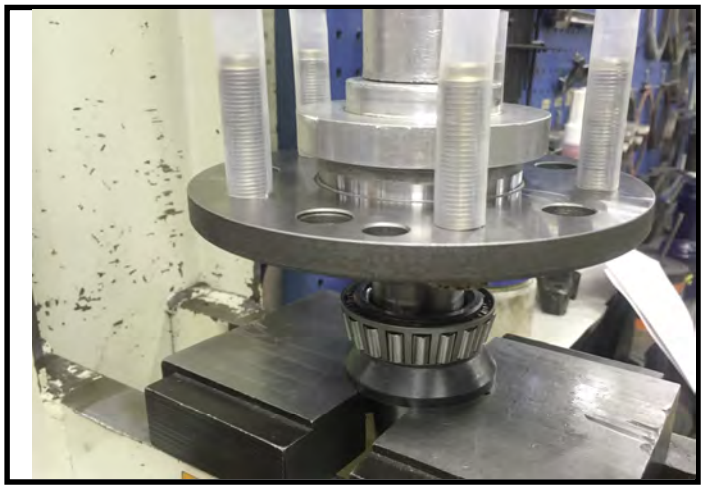
MATERIAL	HEAT TREAT	
	PROTECTIVE FINISH	
Z:\InventorFiles\Assembly_Files\AS004874IN.iam		
STOCK INFORMATION	MACHINING TOLERANCES	
BAR LENGTH: WEIGHT:	.XX .XXX .XXXX .X	
YIELDS PER BAR:	.015 .005 .0005 1/2°	
GROSS WEIGHT (PART):	SURFACE FINISH UNLESS NOTED	

765 SOUTH PIERCE AVE, L

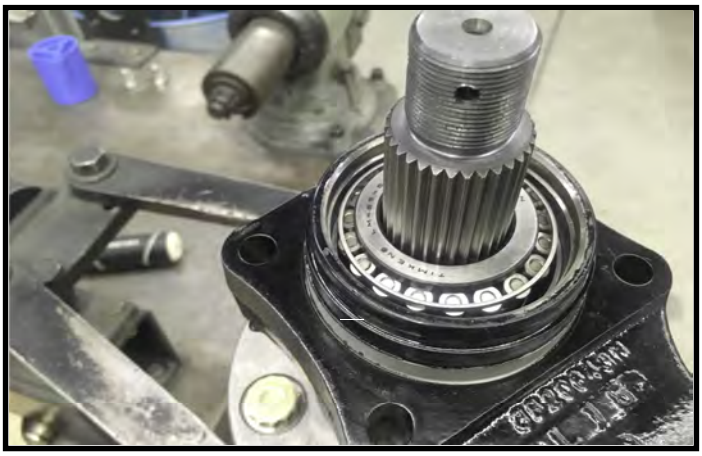
CAD NO: AS004874IN.idw

TITLE: AXLE ASSEMBLIE, CORVETTE 3

DATE	PART NUMBER
4/16/2021	50230

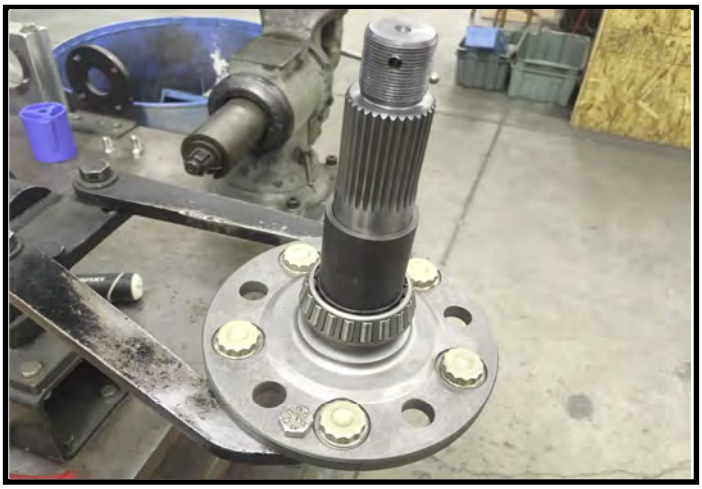


1) The bearing is pressed on the axles without the seals. The seals will be installed later.



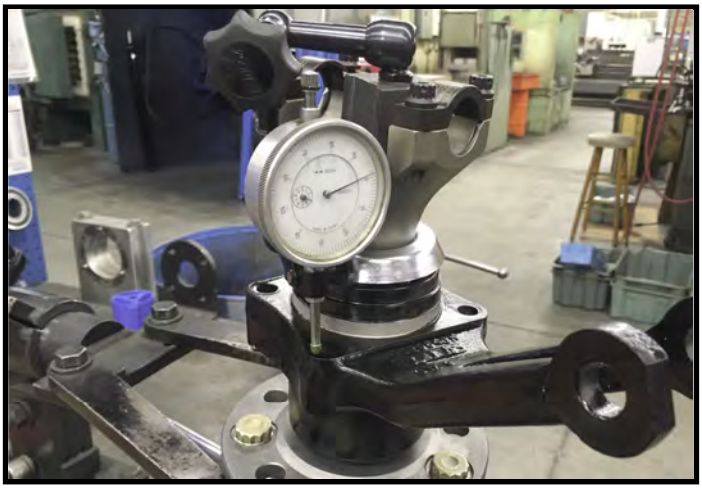
3) Install the carrier with both races over the axle. Seals are not used during the pre-assembly and preload setting. Place the outer bearing over the spline. The bearing has a light press fit, and it may be required to press the bearing against the preload spacer.

5) Torque the flange nut to 240 ft lbs. Tightening this nut will draw the outer bearing cone to the solid preload spacer.

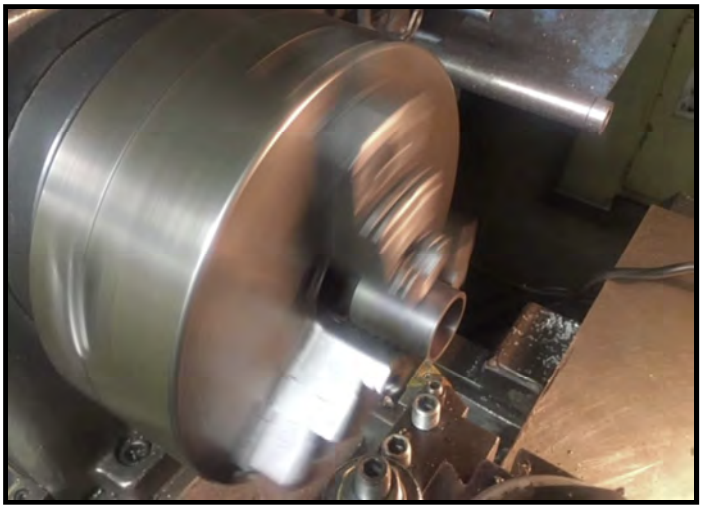


2) The axle with the studs, bearing, and preload spacer is placed in a work holding Bench Mule. This tool allows you to hold the axle when torquing the assembly.

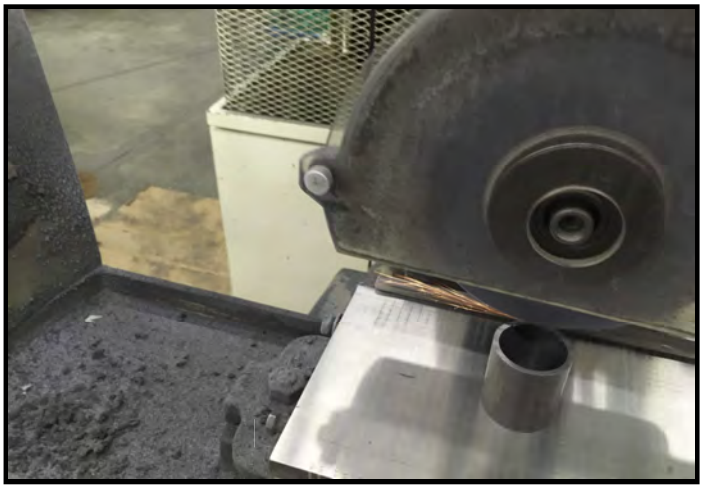
4)The yoke (2) is placed on the axle, then the washer (9) with radius enge agenst the yoke, and the red painted flange nut. The red flange nut (21) signifies that it has the locking form removed, and is used when setting preload. Note: The cotter pin hole is no longer used in axles produced after July 2020. The flange locking nut and locktite is the retaining method.



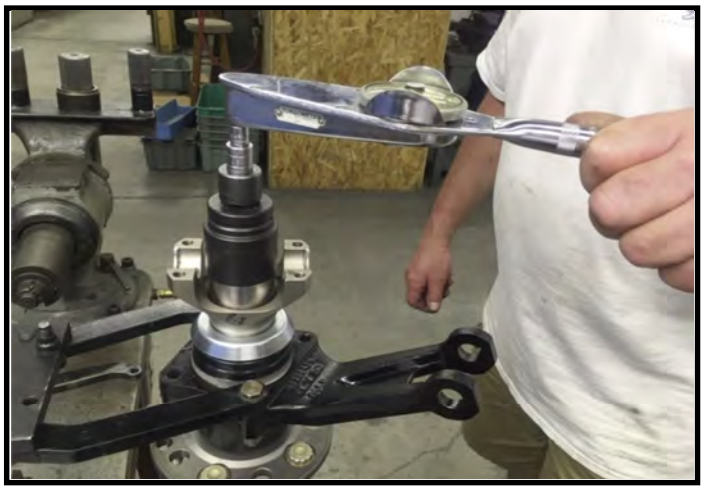
6) A dial indicator is clamped to the housing and the amount of axial movement is noted. The spacer is trimmed by the indictor movement plus a certain amount for bearing preload.



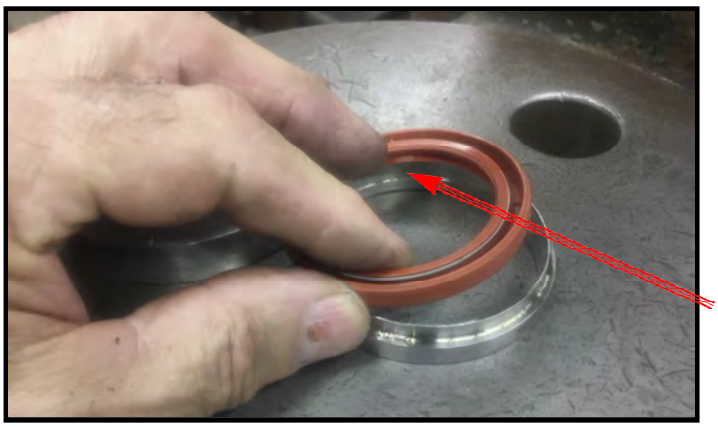
7) The preload spacer is trimmed to the indicator movement plus several thousandths for the preload. The trial set up in these instructions required .005” additional to make the preload five inch-pounds of torque.



8) A lathe or surface grinding can do the trimming. The surface grinding method is more accurate and assures both ends are parallel.



9) The preload is checked with an indicating torque wrench. The torque drag for tapered bearings of this size is 5 inch pounds. After verifying the acceptable preload, re-assemble with the greased bearings and the seals installed.



10) The red seal is pressed in the seal adaptor. Make sure the seal is bottomed against the shoulder. The seal might be pre-installed in the adaptor from the factory.

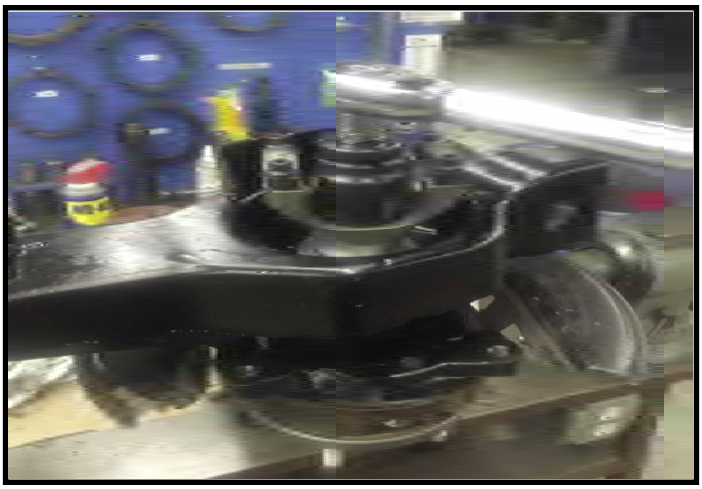
11) The flange (spindle) bearing is removed to install the the seal.

12) Bearings are greased with a bearing greaser cup tool

13) The lubed outer bearing is placed in the carrier. The outer seal is pressed in carrier.

14) The lubed inboard bearing and preload spacer is placed into the carrier. The red seal with the adaptor-ring is pressed in the carrier.

15) The carrier with the caliper mount, backing plate, and trailing arm bolted together is pushed onto the axle. This requires a press because of the bearing's interference fit. With this method, a tubular spacer that clears the spline is used to press against the inboard bearing cone.



16) The assembly is torqued with a fresh-flanged locking nut to 200 foot-pounds. We recoment using Loctite retaining compound in addition to the coating in the nut. A 5 ml of #2701 is included in the kit. Make sure the wheel stud bolts clear the parking brake mechanism (if you have one). The drag with the new seals will be much greater than the initial preload settings.

This is the assembly method that was used in our plant. We realize that the methods will vary depending on the assembler's tools and prefered methods. If there are any questions do not hesitate to call for additional information. 1-800-525-1963.

50230 Kit for (one side) with red assembly flange nut

CORVETTE RACING QUALITY COMPONENTS

ADDITIONAL PARTS FOR IMPROVING THE CORVETTE RELIABILITY

50230-KIT• C2-C3 Corvette Next-Step Rear Axle-Yoke Assembly • Replaces the weak 17-spline axles with 31-spline, and a one-piece u-Joint flange yoke.

50245-KIT • C2-C3 Rear Inner Yoke Shafts (2) • 30 Spline. Uses 12-Bolt car axle side gear to increase strength, and replaces the bolt on u-joint flange. This is the solution for the failure prone 17-spline OEM flange yokes.

50248-KIT • C2-C3 Rear Inner Yoke Shafts for modified C2-C3 Differentials for rears that have the Tom's Gears modified 12 bolt carrier and special ring and pinion gears.

ACG-020

ACG-012

ACG-020 & ACG-012 • C2-C3 Corvette Front Upper and lower Lower Control Pivot Shaft • Heat-treated and shot peened alloy steel.

CORVETTE RACING QUALITY COMPONENT

58922 30 SPLINE BILLET SPIDER KIT
SF-58922 Shot Peened and Polished
Used in ACG-030 Case

50247 MACHINABLE C-CLIP

58919 PINION NUT & WASHER

58914 PINION SOLID PRELOAD SPACER

S98-001 PRELOAD SPACER FRONT HUB
C 2 and C3 Spindle

CORVETTE RACING QUALITY COMPONENT

ACG-030 • C2-C3 Replacement Case for the Eaton™ 19670 Positraction • The is Case produced from thru-hardened alloy steel that solves the problem with cracked and failed cases while increasing gear life. It use 12 Bolt GM axle side and pinion gears for the 30 spline inner shafts. Internal parts not included.

58100 • C2-C3 Steel Main Cap Replacment for Cast Iron Cap.

39038 • C2-C3 Pinon Yoke 1350 Seies u- joint upgrade.

ACG-030-3Cross Pin for C2-C3 M/W Case Uses 12 Bolt Spiders .809 Dia.

39810 AXLE DRIVE SHAFT 4130 TUBE AND END FITTINGS SPICER JOINTS (PAIR)

50225-KIT • C4 '88-'96 Corvette Rear Hub and Yoke Shaft Kit • Features new Timken™ hubs with a larger 32-spline and matching 300M Yoke with Billet Caps.

50210 • C5 Corvette 300M Intermediate Shaft • Replaces GM part number 88893900.

50220 • C5 Corvette CV Shaft • 300M steel replaces GM part number 10311201.

For more information on these parts go to www.markwilliams.com/corvette-parts.html