

# *The Solid Scoop*



**A Newsletter for the Southern  
Calif. Chapter of the Solid  
Axle Corvette Club**



**June 2013**  
Vol. 9 Number 2

***"Look Us Over at" [www.socalsacc.com](http://www.socalsacc.com)***



**Solid Axle Corvette Club (SACC)**  
A National Organization dedicated to  
keeping these Corvettes  
"on the road".

**Club Features:**

- Membership Chapter Clubs across the U.S.
- National Quarterly Magazine
- Annual National Convention
- Web Site: [www.solidaxle.org](http://www.solidaxle.org)  
(non-profit affiliation)

**Also visit the  
SACC National  
Web Site  
[www.solidaxle.org](http://www.solidaxle.org)**

*The Solid Scoop* is a quarterly Newsletter published for the Southern California Chapter of the Solid Axle Corvette Club (SoCalSACC). The SoCalSACC Chapter is affiliated with the National Solid Axle Corvette Club (SACC). The SACC organization is a non-profit group with the intended purpose of bringing together owners and those interested in the early C-1 Corvettes (1953–1962) to help in appreciating these vehicles and "keep them on the road".

C-1 Ownership is not a requirement for membership.

**MEMBERSHIP:** A prerequisite to become a SoCal SACC Chapter member, a person must belong to the National SACC. Applications for membership are available in this Newsletter or our Chapter Web Site, [www.socalsacc.com](http://www.socalsacc.com). Submitting an application along with the appropriate listed dues, is necessary for membership. The SoCal SACC Chapter will forward your National dues to assure your National membership. Once becoming a National member you will receive *On Solid Ground*, the National quarterly published magazine. Again, **MEMBERSHIP APPLICATIONS AVAILABLE: [WWW.SOCALSACC.COM](http://WWW.SOCALSACC.COM)**

*The Solid Scoop*, is intended as a communication for Chapter members about chapter activities, technical articles, classified ads and past events to maintain in keeping our membership informed. The Editor and the Board of Directors of So Cal SACC have made every effort to ensure that the Solid Scoop contains no inaccuracies or errors, either in technical articles, tour information, listings regarding flyer and non-flyer events or in advertisements and is non-offensive and non-political and disclaim liability for any that may occur. Should you find any problem, please do not hesitate to contact the Editor. We will make every reasonable effort to rectify the situation.

Member submitted technical articles are encouraged. Many times these technical articles are based on personal experiences and preferences and as such are intended only as guidelines or helpful information for club members.

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## **The SoCal SACC Chapter Welcomes our Newest Members!**

<u>Member #</u>	<u>Name</u>	<u>Location</u>	<u>C1 Year</u>
214	Jim Plowdon	Los Angeles	56
215	Adam Parker	Mesa, AZ	
216	Greg & Pam Bond	Carlsbad	

## **Calendar of Coming So Cal SACC Events:**

### **2013 Planned Events** (\*indicates a Flyer has/will be issued)

<u>Date</u>	<u>Event</u>	<u>Location</u>	<u>Coordinator</u>
August 24	*Paradise Cove	Malibu	Costales
September	*USS Iowa	San Pedro	?
November 9	*Fall Tech Session	Toyota Museum	Werstein

### **Scoop Features:**

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**SCOOP COVER:** A portion of a car collection belonging to So Cal member Kent Browning. Kent's recently acquired new facility is home to the collection of Oldsmobile's and Corvette's. Additional pictures are seen in p. 8 in this SCOOP highlighting the Chapters Spring Tech Session. Kent is gracious enough to let the Chapter have our Tech Sessions.

## The Sonoma Historical Car Races Tour

**Background:** At the So Cal SACC General Meeting in February this year, Steve Earle made a "pitch" for our C1's to attend the Historical Car Races at the Sonoma Historical Race Track. Steve is the organizer/coordinator for this Event at the racetrack and the year being 2013 is the 60<sup>th</sup> Anniversary of the Corvette. During the following months after the meeting the idea of attending began to grow and this idea was supported by 5 Corvettes from the So Cal Chapter. Support was also added by Lucy Badenhop of the No Cal group. Lucy is the SACC National Treasurer.

So Cal member Bruce Fuhrman took the lead to organize a Caravan for the drive north on Hwy 101, beginning in Camarillo, Bruce's hometown. Several of the attendee's were making the trip a 4-day affair while others with work commitments made the trip in 3-days. One So Cal member, Randy (Lugnut) & his wife Diane Solle drove the route from San Diego County with the added complexity that Randy was in the process of replacing his '60 engine with a 350 Crate Motor which he purchased several weeks prior to driving the Caravan. The engine replacement "story", is another epoch.

Those So Cal Chapter members (along with the car driven) attending the races were Bruce & Janice Fuhrman ('54), Jim & Judy Lundal ('60), Randy & Diane Solle ('60), Bret Botzong ('60), Jim & Joan Nielsen ('57) and Phil & Roche (Ford Rental). Traveling along with the caravan were John & Cindy Dworzak (Lundal's daughter and husband) in their 2006 Miata convertible. The Caravan left on Thursday and spent that night in Paso Robles. We all arrived Friday in Novato on the second night. Jim Nielsen had booked a block of rooms in Novato (cheaper and closer to the race track) instead of Napa. Saturday was spent all day at the races and our passes gave us access to the whole racetrack.





**During the February General Meeting, Steve Earle had said we would have a 3 lap racetrack run with our cars. This occurred at the Noon Break and it was great. The Sonoma course is a road course with hills, curves, etc. to get your blood pumping. Steve also provided designated parking we received with a view of the whole Sonoma complex. A shuttle service was also available to transport to the stadium below.**



**Saturday after the races most members participated in the parade to the Sabastiani Winery approximately 15 minutes away in Napa. This event was almost more awesome than running the racetrack. The parade consisted of the racecars in a line and several cars (including Fuhrman and Lundal) driving down the highway with total CHP escort at every intersection. People were standing and waving all through the drive. Most racecars ran with open exhaust just as they raced on the track. At the winery we had wine tasting and food tasting from most the wineries in the area. Following the wine and food (2 hours), the CHP again closed all the intersections and the parade returned to the racetrack.**



**Above are scenes from the Sabastiani Winery Event. The culmination of a fine day of racing.**

## **Traveling Home ... Sunday & Monday**

**Sunday, for several member began the 2-day trip home. Lundal's, Fuhrman's, Solle's and Botzong traveled down Hwy 1 through San Francisco (via the Golden Gate Bridge), Monterey, Big Sur, and Cambria. Half the group spent the night in Cambria while Lundal's and daughter spent the night in Morro Bay. Judy Lundal had a cousin in Los Osos and had a nice visit with them.**

## **Tour Thoughts**

**This road tour was extremely good and very enjoyable to drive with the C1's. Bruce Fuhrman's plan was each day's drive would be a comfortable distance and the selected accommodations comfortable (also credit to Nielsen's selection in Novato).**

**One interesting "happening" was while returning all crossed the Golden Gate at least once while Lundal and daughter missed the Hwy 1 exit and crossed the Bridge 3 times. There were no toll collectors so everyone just drove. Lundal's daughter received a Bill in the mail for \$12 and Botzong and Solle's received a Bill for \$6. No others received Bills. No explanation! Only Lundal and Fuhrman were running YOM plates.**

**The return down windy Hwy 1 was beautiful but most drivers did not have the time to stop and enjoy. Lundal's daughter had never driven it before and her comment, OK, did it and it might a long time to repeat it.**



## Miscellaneous Sonoma Pictures



T to B, Corvette, Corvette, Miata?



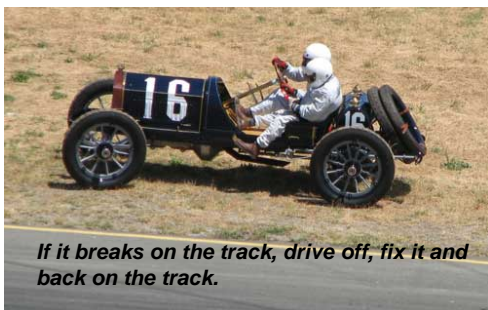
That's what I like, symmetry!



Lundal family, L to R, Cindy, Jim & Judy



Once, Twice, Three Times with no Toll?



If it breaks on the track, drive off, fix it and back on the track.



**56 Corvette SR-2**

OWNERS *Rich & Sher Mason* | CARSON CITY, NV.

FIRST OF 2 HIGH FIN SR 2 CORVETTES BUILT ORIGINALLY FOR JERRY EARL, SON OF G.M. VICE PRESIDENT HARLEY EARL-MAY 1956. DRIVEN BY ZORA DUNTOY, DICK THOMPSON, JIM JEFFORDS AND BUD GATES.

THE 1958 IS MODIFIED NATIONAL CHAMPION, RACED AT ELKHART LAKE, NASSAU, SEBING, ROAD AMERICA, MID OHIO, MILWAUKEE NATIONALS AND CUMBERLAND.

SPECIAL FEATURES INCLUDE FUEL INJECTION, PROTOTYPE 4 SPEED SHIFTER, RALIBRAND KNOCKOFF WHEELS AND HUBS, 338 C.I. ENGINE, 37 GAL. BAFFLED FUEL TANK, DUAL FUEL PUMPS, SEBING SUSPENSION, QUICK STEERING ADAPTION, AIR VENTED FRONT AND REAR BRAKES WITH AIR SCOOPS IN DOORS, REAR TORSION BAR, HEAD LIGHT COVERS, ACTIVE LOUVERED HOOD, ACTIVE FENDER SCOOPS, EXTENDED NOSE, HIGH REAR FIN, ENCLOSED ROLL BAR, WIND SCREENS, COVERED TAIL LIGHTS, COLUMN MOUNTED TACH, WOOD STEERING WHEEL AND CUSTOM INTERIOR.





## T-10 trouble shoot.....Randy Solle

*This is not an article telling you how to rebuild your T10 4-speed, but rather just a couple of items, that I had found out, that I have not heard of, or run across before, while working on mine.*

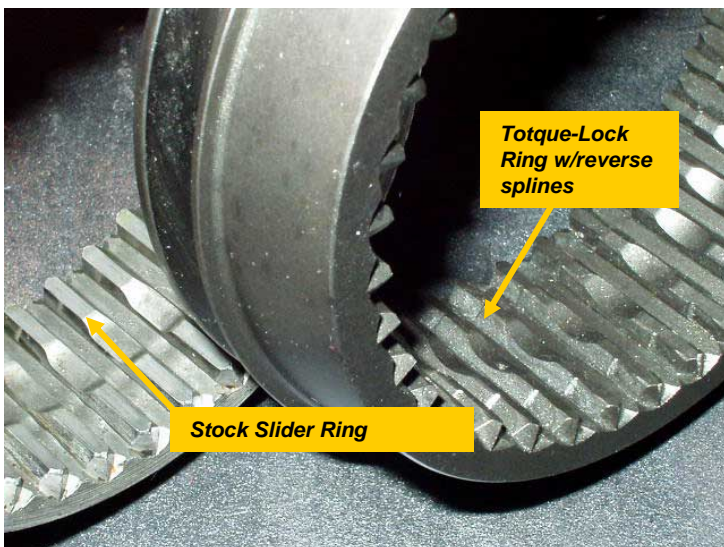
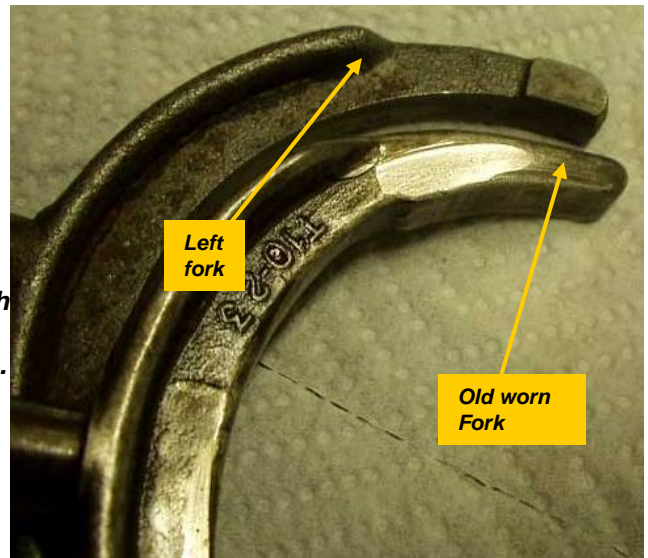
*Recently, while I had the engine out of the 60, I thought I would address a couple of issues, which I had been having with my 4 speed T10. One item was, I was having a leakage problem, and the other was with it jumping out of second gear recently.*

*I had completely rebuilt this tranny about 35 years ago, but then it sat for the next 30, before I finished the car. The last time I had the tranny out, about 2 years ago, I had added a seal to the front of the cluster gear shaft, and when I went to put it back together, I had a difficult time finding gaskets and parts for it. Also, for some reason, I started to have a problem with it wanting to jump out of second, when I was driving down our winding canyon road. This seemed rather strange, considering I had put all new syncro assemblies in it, when I had done the original rebuild, and it only had about 12,000 miles on it since.*

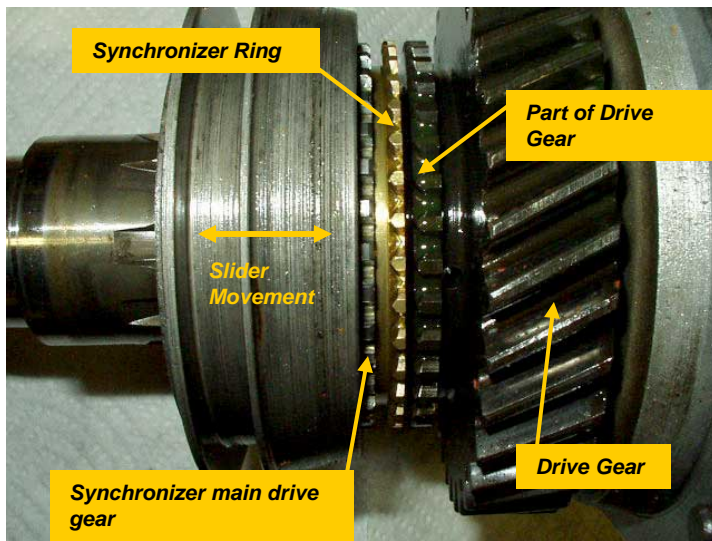
*While looking for a supplier for gaskets and such, I come across the website of D&L Transmission, from Huntington Station N.Y., [www.muncie4speed.net](http://www.muncie4speed.net). Larry Fischer is the owner, and I was very pleased with the selection, quality, and pricing of his products. He has about anything you need for the various versions of Borg Warner or Muncie transmissions. His website also has some tranny identification on it. While conversing with Larry by e-mail, he mentioned that I should check my shifter forks for excessive wear. The pads on the end of the forks that ride in the syncro Slider Ring new, check about .360 wide. He said if they get down below about .340, they should be replaced. This is information that I had never heard of, or read before. Upon checking mine, one was about .320, and the other was clear down around .280. I have a feeling, that the last time I had it apart, I must have switched the 2 forks, and this is why I started too have the second gear issue.*

*(Right Picture) The left fork is the new one, and you can see that the pads are worn completely off of the old fork on the right. With the fork being thinner, this would cause the Slider Ring, to not fully engage onto the main gear, causing it to want to disengage prematurely.*

*While I had it apart, I noticed that he also sells the Torque-Lock syncro Slider Ring's. This has a reverse angle on the spline, which actually causes it to want to pull the Slider Ring onto the gear, rather than push it off. I'm not sure where these are made, but they appear to be powdered metal, and are a very good quality, for \$34. So just to be sure, I also installed one of these on my 1<sup>st</sup> – 2<sup>nd</sup> gear syncro, as well as a new set of forks.*



*(Left Picture) On the left is a stock Slider Ring, and on the right is the Torque-Lock ring, with the reverse angled splines.*



The stock Synchronizer Slider Ring, moves across the Synchronizer Ring which acts as a brake, to help get the synchronizer and the gear turning the same speed, and then engages with the drive gear on this small narrow set of teeth. So, when your hammering gears, or grinding some burger, it's not the large helical gear that you hear being chewed up, it's that small ring that runs along the side of it. But you still have to replace the entire gear, if you damage it.

I am not sure if it was one or both, but the transmission works fine now, and I can not get it to jump out of second, no matter what I try. It sure is nice being able to drive down the canyon, using both hands on the steering wheel again. I'm sure my wife is much happier also.



Kent standing near some of his Corvettes

## Spring Tech Session at Kent Browning's New Facility

Kent Browning, So Cal SACC Chapter member (#118), has for several years opened his building to our Chapter to host our Technical Sessions. These Tech Sessions usually draw approximately 80 people along with parking for our C1's. Adding to the meeting are the surroundings featuring Kent's magnificent car collection of Oldsmobiles and Corvettes.

Kent recently acquired a new building where he could spread out his collection and also have a separate room to work on the cars. The work room contains two car lifts and significant floor space to work.



Kent's family has been in the car sales business for a significant number of years beginning with Oldsmobile and Kent continues owning several dealerships. Below are pictured some of his car collection sitting on the floor.



**Technical Session:** As planned our session began about 10:30 Saturday morning. The preplanned topics all were directed toward our C1's.

## Front Suspension Checks and Lubrication

During Walden's discussion he discussed checks to do on front end spindles, bearing wear, lubrication (Brake Drum grease pictured to the left), idler arm tightness and lubing. Another topic discussed was converting from ball to tapered roller wheel bearings.

Walden Dahl owns his business in Victorville and he is listed on the membership commercial listing in this SCOOP. One rebuild task his company has been performing is rebuilds on front spindles and working the bushing/king pin assembly. Call Walden for more information.



Walden Dahl addresses front suspension and wheel bearings.







### **C1 Electrical Trouble Shooting.....John Fekete**

*John Fekete is also located in Victorville and does much of Walden's electrical work. John's presentation began with saying that the C1 electrical system is not the same as those of metal cars. The commonality with metal cars is that your electrical system needs a unbroken path (for current/ampereage) between the positive and negative Battery terminals. The difference in our C1's is that the car component being electrically powered cannot rely on the car body for a return ground (negative terminal) since it is fiberglass and does not conduct electricity.*

*On the C1 and often the engine and associated engine powerplant components rely on this ground. Other electrical components can use other means for grounding such as the cars frame. Without spending pages on this subject, one of John's suggestion is to obtain a length of wire and if an electrical component (including an radio antenna) is giving problems use the wire to directly ground that component to a "known" good ground, i.e. the negative Batt Terminal. If the misbehaving component suddenly works correctly, investigate the grounding of that component. As a final suggestion, make sure the Batt. Ground at the engine is clean and not corroded or loose.*

*John's other expertise is C1 radios and he has significant background in repair and restoration of these items.*

### **Collector Car Insurance....Greg Davidian**

*This is a popular topic with all our people/members. Once Greg began, questions came up immediately. Greg's main purpose within his talk was: "Make sure your insurance has an agreed on value for your car". Don't blow it off with "estimated" or other words, make sure your value is an agreed value. If the car is stolen, or totaled you don't want to be in a battle at estimating the value within the market.*

### **C1 Body Lubrication Points.....Chip Werstein**

*Chip provided a list of Body Lubrication Points and the product to use.*

*(Exterior) Hood Hinges..M-1; Hood Support..WG; Hood Latches..WG; Door Hinge Springs..WG; Door Hinge Pins..M-1; Locks..Graphite Spray; Door Latches..M-1; Deck Latch..M-1; Deck/Trunk Hinge..M-1 & WG; Trunk Latch..M-1; Convertible Top Frame..M-1; (Interior) Wiper Transmission/Drum..M-1; Cowl Vent..M-1; Seat Tracks..Synthetic grease (red); Window Tracks..Synthetic Grease (red); Window Rollers..M-1; E-Brake Handle Shaft..M-1*

*Note: WG is White Grease, Clean seat and window rails prior to grease application*



**Body Lubrication suggestions**

### **Fire Extinguishers for Automobiles....Evan Williams**

*Evan provided a listing that identified the advantages and disadvantages of the types of Fire Extinguishers. Also, with Evan's extensive background in the Fire Department he identified all the safety aspects and assessments one must make when encountering a automobile fire, whether it is your car or another's car.*

*Suggesting a specific extinguisher depends on many considerations but a Halon Extinguisher appeared the most popular as it is a "clean agent" and is effective in Class A, B and C fires.*



**Evan Williams during presentation**

### **Gasolines, Oils & Lubricants.....Doug Prince**

*Doug Prince was brought back to the podium for a repeat of this earlier Tech Session subject. Doug provided several pages of information which has been included in previous SCOOP Newsletters.*



**Doug Prince with samples and recommendations.**

# C1 Restoration Part 5.....Chuck Gibney & others

**Editor note:** Two 1962 C1's in-process restorations began during 2011. Both C1's are being worked on somewhat concurrently. I (Editor) thought it would be of some interest to follow the restoration process over several issues in the SCOOP. These articles might also be some assistance to motivate others or restart their work and/or also share the steps and recommend "how" best to proceed. Both restorations began by dismantling the cars and have completed the Frame restoration stage. The SoCalSACC member owner's of the '62's being reported are Chuck Gibney, #189, and George Iverson, #62. Assisting the owners are Steve Clifford, #58, and a couple additional non-members. The June 2012 SCOOP was the kick-off article and all copy's from previous SCOOP's are posted on the Chapter Web Site ([www.socalsacc.com](http://www.socalsacc.com)).

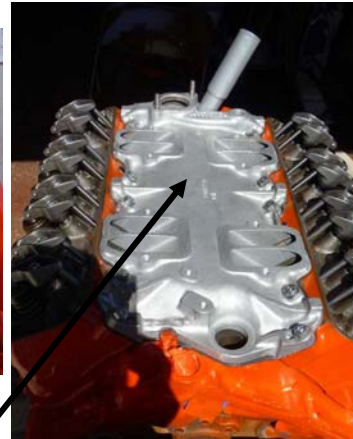
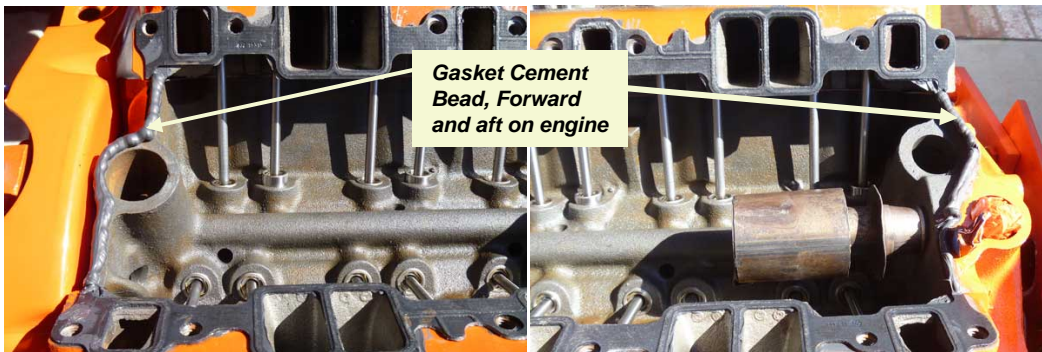
So Cal member George Iverson and I have been performing almost identical frame-off restorations of two 1962 Corvettes. Some of the pictures here are of his car and some of them are of mine. In my last article (March, 2013 Scoop) we had completed most of the engine overhaul, except for the installation of the intake manifold. Intake Manifold installation is a fairly simple task, requiring gaskets where the intake manifold rests on the heads, and at both ends where the manifold rests on the block. I did learn a couple of important pointers from Mr. Yo, our engine rebuilder, and from Steve Clifford prior to the installation.



Chuck Gibney, So Cal member #139

Mr. Yo advised that we carefully check the fit between the intake manifold and the heads to ensure they are flat against each other. He explained that when the block or heads are shaved to make sure they are flat, enough material may be removed to change the angle where the manifold sits on the heads. If the fit is not correct, the bolts may be offset, or the gap may be too large for the gaskets to seal properly, leaking air, fuel or oil. We checked, and the alignment was proper.

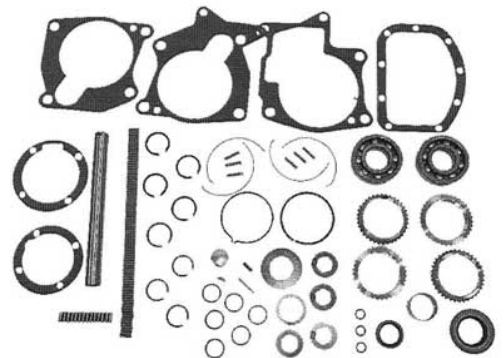
Steve Clifford advised that the rubber gaskets which are supposed to fit where the front and back of the manifold sits on the engine often leak oil. Steve recommends the gaskets not be used, and to use a large bead of gasket cement instead. ( Pictures 732 & 733 ) We did this, and we'll see what happens. Here is George Iverson's fuel injection manifold bolted into place. (Picture 741)



Fuel Injection Intake Manifold installed on George Iverson's Engine

My 4 speed T-10 transmission had not shifted smoothly when I took it out of the car, so I decided to overhaul it, with Steve Clifford's help. The 1961 Passenger Car Shop Manual provides an excellent set of procedures for doing this. The manual is available from most parts houses, and is invaluable for this process. Not having taken a transmission apart before, I would not have attempted this without the manual, and the help offered by Steve. The overhaul also requires access to a bearing press.

An overhaul kit (pictured right) is available from Corvette Central for about \$180. It includes most of the parts you will need, including front and rear main bearings, synchromesh rings, gaskets, seals, springs, needle bearings, snap rings, thrust washers, main drive nut, and a new countershaft.



**Editor Note:** Earlier in this SCOOP issue, member Randy Solle provided another source for T10 parts: D&L Transmission, from Huntington Station N.Y., [www.muncie4speed.net](http://www.muncie4speed.net). Larry Fischer is the owner



The 1961 Passenger Car manual includes an Exploded view of all the parts, and their relationship to each other, and was referred to throughout the process. Unfortunately, the parts on the diagram were numbered incorrectly, so I corrected them in the exploded picture below. I'm not going to go through the entire process, as it is explained quite well in the Shop Manual. I will make note of some helpful hints while disassembling the transmission. Use some trays to catch all the roller bearings. Take pictures as you go along, to remind you how the parts fit together. Inspect the main gears carefully. These show little wear, so the synchromesh gears must have been doing their job. (Picture 807).

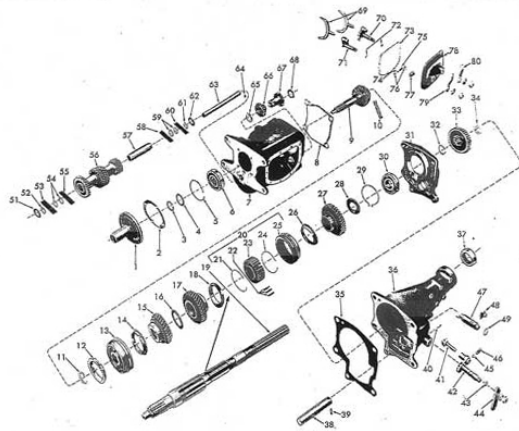


Fig. 47—Four-Speed Transmission—Exploded View

- |                                |                              |                                   |                                    |
|--------------------------------|------------------------------|-----------------------------------|------------------------------------|
| 1. Bearing Retainer            | 20. First and Second Speed   | 40. Reverse Shifter Shaft Lock    | 62. 6x. Tanged Washer              |
| 2. Gasket                      | 21. Clutch Assembly          | 41. Reverse Shift Fork            | 63. 6x. Countershaft               |
| 3. Selective Fit Snap Ring     | 22. Clutch Keys              | 42. Reverse Shifter Shaft and     | 64. 6x. Countershaft Woodruff Key  |
| 4. Spacer Washer               | 23. Clutch Hub               | 43. Reverse Shifter Shaft and     | 65. 6x. Reverse Idler Front Thrust |
| 5. Bearing Snap Ring           | 24. Clutch Key Spring        | 44. Reverse Shifter Shaft Ball    | 66. 6x. Reverse Idler Gear (Front) |
| 6. Main Drive Gear Bearing     | 25. First and Second Speed   | 45. Reverse Shifter Shaft         | 67. 6x. Tanged Thrust Washer       |
| 7. Transmission Case           | 26. Clutch Sliding Sleeve    | 46. Reverse Shifter Shaft "O"     | 68. 6x. Forward Speed Shift Forks  |
| 8. Rear Bearing Retainer       | 27. First Speed Gear         | 47. Ring Seal                     | 69. 6x. Gear Shifter Shaft and     |
| 9. Main Drive Gear             | 28. Synchronizing Ring       | 48. Reverse Shifter Lever         | 70. 6x. Third and Fourth Speed     |
| 10. Bearing Rollers (14)       | 29. Washer                   | 49. Speedometer Driven Gear       | 71. 7x. Gear Shifter Shaft and     |
| 11. Snap Ring (.086" to .088") | 30. Rear Bearing Snap Ring   | 50. Retainer and Bolt             | 72. 7x. Detent Plate               |
| 12. Fourth Speed Gear          | 31. Rear Bearing             | 51. "O" Ring Seal                 | 73. 7x. Gasket                     |
| 13. Third and Fourth Speed     | 32. Rear Bearing Retainer    | 52. 5x. Tongued Washer            | 74. 7x. Interlock Pin              |
| 14. Third Speed                | 33. Selective Fit Snap Ring  | 53. 5x. Spacer (.050")            | 75. 7x. Poppet Spring              |
| 15. Third Speed Gear           | 34. Reverse Gear             | 54. 5x. Bearing Rollers (20)      | 76. 7x. Detent Balls               |
| 16. Second and Third Speed     | 35. Speedometer Drive Gear   | 55. 5x. Spacers (2-.050")         | 77. 7x. Innerlock Sleeve           |
| 17. Gear Thrust Washer         | 36. Rear Bearing Retainer to | 56. 5x. Countergear               | 78. 7x. Transmission Side Cover    |
| 18. Second Speed Gear          | 37. Case Extension           | 57. 5x. Countergear Roller Spacer | 79. 7x. Third and Fourth Speed     |
| 19. Mainshaft                  | 38. Rear Oil Seal            | 58. 5x. Bearing Rollers (20)      | 80. 7x. Shifter Lever              |
|                                | 39. Reverse Idler Shaft      | 59. 5x. Spacers (2-.050")         |                                    |
|                                | 40. Reverse Idler Shaft Lock | 60. 6x. Bearing Rollers (20)      |                                    |
|                                |                              | 61. 6x. Spacer (.050")            |                                    |



The main gears and shift forks don't come with the rebuild kit, but are available from a number of sources on the Internet. My shift forks were badly worn, and are probably one of the reasons the transmission would slip out of gear once in a while. I ordered new ones on-line. Gear changing in the transmission occurs when one of the forks pushes a clutch assembly forward or backward, causing one of the synchromesh and main gears into mesh with the mainshaft and the countergear. The clutches ride on keys and springs which help them to move along the mainshaft, and lock into place. Disassemble everything and clean the parts that are not going to be replaced.

The reassembly is fairly complicated, but straightforward. It will take two people to assemble the clutches, springs, keys, and synchromesh gears. See notes on page The Figure below shows a cross-section view of the inside of the countergear. The countergear is hollow, and contains 80 individual roller bearings and 4 thin spacers. These are also depicted on the exploded view in the figure above as numbers 53, 55, 58 and 60. These are installed in the countergear using very heavy grease to hold them in place. We used some 40 year old axle grease that George Iverson had from his father. Later, the needle bearings will be held in place by the countershaft, after the gear is installed in the case. (Picture below)

with a suitable tool as shown in Figure 60, push the shifter shaft into place and turn until the ball drops into place to detect on the shaft detent plate.

6. Install shift fork.

NOTE: Do not drive the shifter shaft lock pin into place until the extension has been installed on the transmission case.

Clutch Keys and Springs

NOTE: The clutch hubs and sliding sleeves are a selected assembly and should be kept together as originally assembled, but the three keys and two springs may be replaced if worn or broken.

Reassembly

1. Push the hub from the sliding sleeve. The keys will fall free and the springs may be easily removed.

2. Place the two springs in position (one on each side of the hub), in a tapered end of each spring falls into the same keyway in the hub. Place the keys in position and, holding them in place, slide the hub into the sleeve.

ASSEMBLY

Mainshaft Assembly

1. From rear of mainshaft assemble first and second speed clutch assembly to mainshaft (sliding clutch sleeve taper toward the rear, back to the front) and, using 2-5764, press the first gear bearing on the hub (Fig. 60).

Fig. 60—Installing First Speed Gear Bearing Using 2-5764

2. Install the first speed gear synchronizing ring as the method in the ring correspond to the keys in the hub (Fig. 61).

Fig. 61—Installing Synchronizing Ring

3. Install first speed gear (with hub toward the front) and the first speed gear thrust washer. Make certain that the grooves in the washer are facing the first speed gear.

4. Using 2-5764, press on the rear bearing with the snap ring groove toward the front of the transmission (Fig. 62). Firmly seat bearing against the shoulder on the mainshaft. *See 1961 Shop Manual, Page 12*

Fig. 62—Installing Rear Bearing Using 2-5764

5. Choose the correct selective fit snap ring (.867", .900" or .905") and install it in the groove in mainshaft behind the rear bearing. With proper ring, maximum distance between snap ring and rear face of bearing will be from zero to .005".

NOTE: Always use snap ring when re-assembling transmission and do not expand the snap ring further than is necessary for assembly.

6. From the front of the mainshaft, install the second speed gear synchronizing ring as method in the ring correspond to the keys in the hub.

Fig. 63—Installing Second Speed Gear Bearing Using 2-5764

7. Install the second speed gear synchronizing ring as the method in the ring correspond to the keys in the hub (Fig. 63).

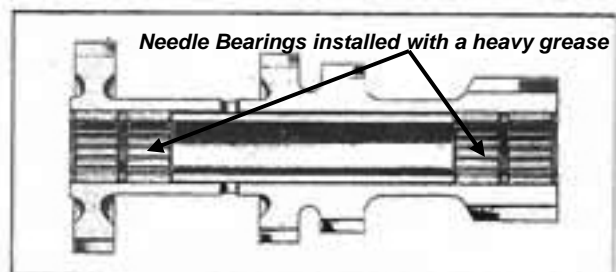
Fig. 64—Installing Second Speed Gear Bearing Using 2-5764

8. Install the second speed gear synchronizing ring as the method in the ring correspond to the keys in the hub (Fig. 64).

Fig. 65—Installing Second Speed Gear Bearing Using 2-5764

9. Install the second speed gear synchronizing ring as the method in the ring correspond to the keys in the hub (Fig. 65).

Fig. 66—Installing Second Speed Gear Bearing Using 2-5764

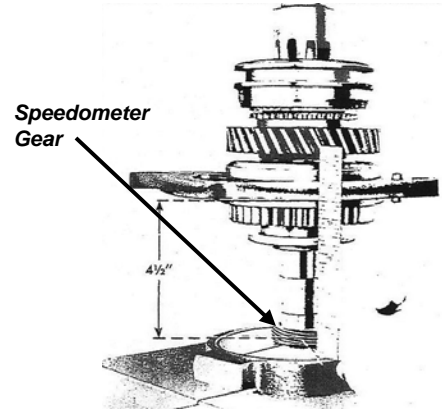


Hollow Countergear containing needle bearings.

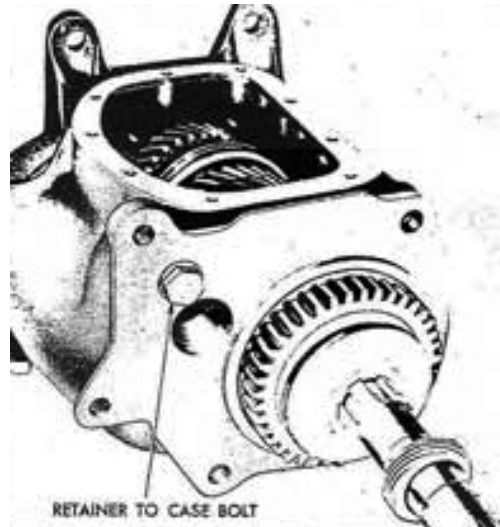
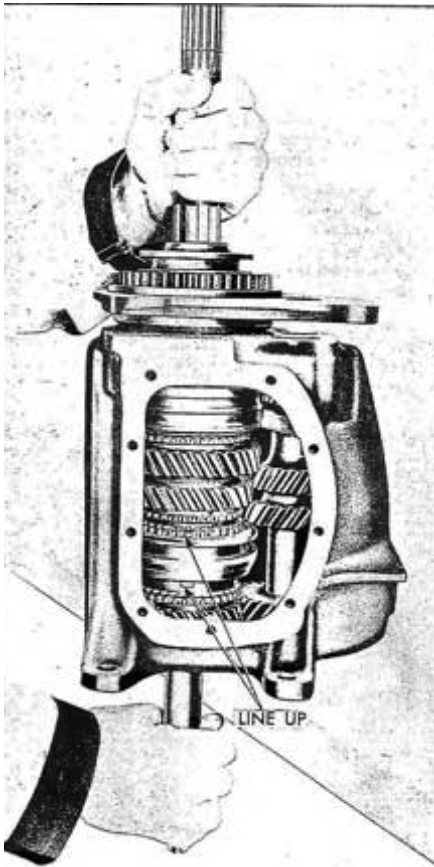


The reassembled mainshaft is shown in the picture to the left. The clutches as shown are in neutral. The last synchronesh gear will fit into the left side of the clutch.

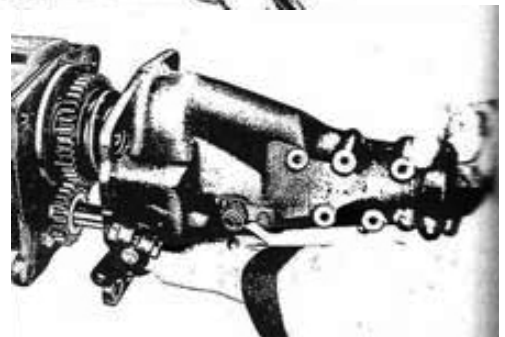
In figure 64 the speedometer gear has been pressed back into place on the mainshaft. Carefully press the gear into place at the location shown, as there is no natural place for it to stop. While we were pressing the gear into place, we got the gear slightly cocked on the shaft, and then it was too loose to stay in place, and we had to buy a new gear.



Everything in the transmission is a tight fit, and the correct sequence must be followed (don't ask me how I know). The main drive gear is installed into the front of the case, and then 14 larger roller bearings are installed in the back of the gear, using heavy grease to hold them in place. The countergear is placed into position in the transmission case, the mainshaft is installed (being careful not to disturb the 14 roller bearings), and then the countergear is moved into mesh with the mainshaft. The countershaft is then carefully slid into place through the roller bearings inside the countergear. If you knock one of them out of place, you start all over again. (don't ask me how I know.) The countershaft is held into place with a woodruff key. It's a good idea to put gasket cement around the end of the countershaft at the front of the transmission to keep it from leaking grease. The three pictures below shows a view of the inside of the completed assembly.



As referred to earlier in this article, obtain a copy of the 1961 Passenger Car Manual to provide step by step instructions.





*I'm sure this sounds like one of those jobs where everything can go wrong. It probably can, but it really helps to have someone helping that has done this before, and the result is very satisfying. Now we were ready to install the engine and transmission into the chassis.*

*We took the engine off the stand, and placed it in position over the chassis using an engine hoist. We had sanded the paint off the surfaces of the front engine mount bar where the mounting bolts and ground straps connected, and where the engine mounts attached to the frame, to ensure we would have a good ground connection between the engine and the frame. The engine was bolted onto the front mounts.*



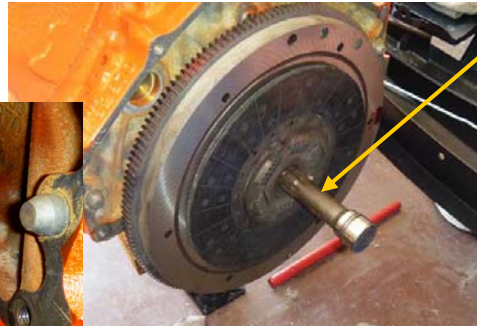
### ***Flywheel, Clutch Assembly and Bellhousing Install***

*The flywheel, clutch disc, and clutch plate were cleaned with Mineral spirits to remove any oil or dirt. We installed a new pilot bearing/bushing in the center of the crankshaft. The flywheel was bolted to the crankshaft, with Locktite on the bolts and the clutch disc was placed against the flywheel using part of an old transmission for a pilot. The flywheel and clutch plate had been balanced with the engine, so we made sure we lined up these parts with the painted balance marks, when we installed the clutch plate.*



*Bolting on flywheel.*

*Although not shown in the picture, the clutch fork and throwout bearing were installed, and then the clutch housing was installed.*



*(left) Pilot spline used for alignment of clutch disc prior to clutch pressure plate installation.*







The transmission was set in place, and bolted to the clutch housing and to the rear transmission mount.



There is still a lot of work left on the project, but the drive train installation was a real milestone. Next we'll look at some very interesting body issues.

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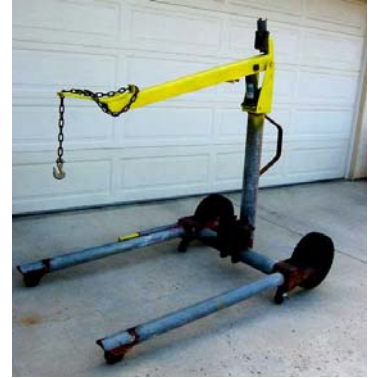
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