



Buckeye Triumphs Newsletter

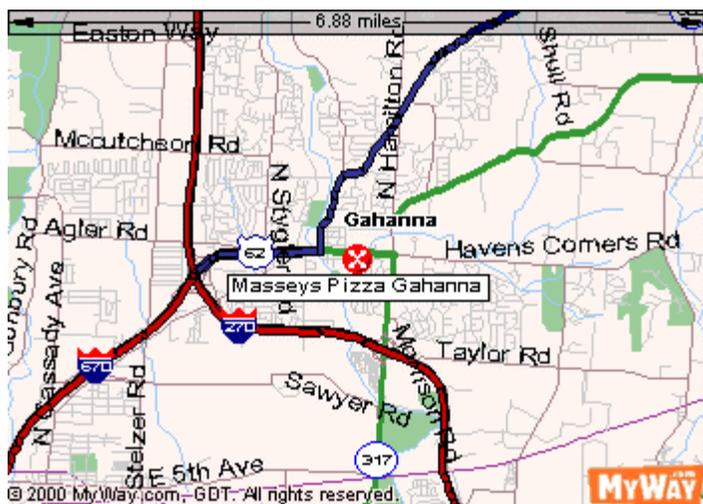
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Please let me know of updates by calling. Bruce or Ryan Miles 740-587-4179 or bmiles@intinfo.com

December BT Social / Business Event



Tuesday evening, December 4th @ Massey's Pizza.
 261 Lincoln Cir, Gahanna OH 43230 (614) 476-0315

We have a space reserved. Meeting will start at 6:30 – you might want to come a few minutes before to get your food order in. We will be discussing the holiday party, some TRials 2002 things, nominations and (hopefully) election of new officers.

We will also discuss plans for the Holiday Party to be held at the Granville Inn on Saturday, January 19th, 2002.

ANNUAL DUES - MEMBERSHIP RENEWALS 2002

FIRST, Thank You for supporting Buckeye TRIUMPHS in 2001; a Tremendous third year for all of us.

Our sustained growth and expanded activities will again depend upon your continued support, active involvement and personal creativity.

Now, **HEAR YE ** HEAR YE **

The Tax Man Cometh!!

Current member's Calendar Year 2002 Membership Renewal Dues are payable by January 31, 2002. Please submit your check for \$20.00, payable to Buckeye TRIUMPHS and mail to Buckeye Triumphs c/o Jim VanOrder, 9023 Concord Rd., Johnstown, Ohio 43031.

Please include any updates, address changes, car info etc., for our database. PLEASE NOTE: IF you joined the club after July 1, 2001 then your Renewal Dues are only \$10.00 for your first renewal.

BT by-laws established Calendar Year dues at \$20.00 per family membership, with full payment at initial membership. The intent was to avoid monthly renewal tracking and bookkeeping efforts. Members who joined after July 1 would be asked to pay only \$10 at their first renewal.

Editor's Corner

First, an update on our injured members. Margo Washburn broke her ankle in a groundhog hole on our October drive. She has been in a wheelchair since her surgery and will be beginning physical therapy next week. I spoke with her today and she seems in good spirits. John and Becky Hartley were in an auto accident in late October and were both banged up pretty good. Becky required surgery for a crushed tibia that required 2 screws to rebuild the damage. Apparently the removal of 25 staples was not "fun" but she seemed in good spirits today. John was banged around pretty badly and is just now getting back to "normal". Bob Mains had his back operation just yesterday, the surgery went well and the prognosis for recovery looks good. I'm sure that we all wish them well.

I've been busy playing telephone tag this month trying to schedule the Holiday party (January 19th). I have also been quite busy setting up a workshop for our new 250 project car. It is just about done! Electric gets hooked up this weekend. Pictures next month.

We are getting down to business for TRials 2002. It all seems to be coming together quite nicely. Lots of work to do. If you have any suggestions or knowledge of Longaberger please let us know. Everyone that I talk to in Granville is excited about Triumphs taking over for TRials.

We saw our friend David Hannah over the Thanksgiving weekend. David followed us into our driveway when we first pulled the '72 home 4 years ago with a "whatcha got there?" question. Turns out that David lived about ¾ of a mile from our home and was restoring a TR6 in his garage. David also had lots of other British things but he was transferred to Tennessee about 1½ years ago. He was home visiting family. It was a nice day and we were able to take him out for a quick Triumph "fix".

Nelson has been quite busy doing a Christmas "wish list" for the Triumph enthusiast. Check out his article this month and

let him know if you have any ideas to add to the list. He will be keeping it up to date on the Web site (Check out the "Gifts" link). Be sure to leave copies where your other half can find it for shopping. Have fun – additional ideas to Nelson!

We need to elect new officers in December. **If you have the urge to serve** (and this will be a fun and challenging year) please make your inclination known to any of the current officers. (I'm planning to continue as newsletter editor, if you will all have me!)

Bruce Miles bmiles@INTInfo.com

Next Newsletter Article Deadline – December 29th, 2001

November Event / Meeting Minutes

Editor's Note: Well, everybody is hurt, so I have to do the event minutes this month. Expect lots of pictures.

A wonderful day in November for our last Triumph run of the season. A good turnout of cars set off from the McDonalds in Dublin towards Bellefontaine to have a wonderful meal of Amish cooking. Many of us were able to have our tops down (and warm hats on) for the entire day.

My wife Kim was able to join us (since sailing season is over) and she only had one question: Do you always have to turn around so many times (i.e. get lost).

It was not one of our better outings for following directions. (John Schilling, who did a great job on the layout of the drive, had to go to the Buckeye's game) I want all (Bob) to know from now on (Bob) that there shall be no more turning around in the median strip on 4 lane roads (Bob).

We stopped for lunch at the Amish Home and had quite a nice lunch, including wonderful deserts. The peanut butter pie was especially good!

After lunch, we stopped at the mythical "high point" in Ohio for a photo opportunity and then we wimped out on the ride home by just following route 33 back to Columbus. (I can't believe how quickly the sun goes down in November)

Here are some pics:



Say Cheese



Rod Yost had a new toy (and still a TR3 in pieces)



OOOOOOO, AHHHHHHH - Sam's needs more power.





20 members in attendance.



I am glad to report that there were no broken ankles or other health problems on this event.

Bruce Miles, secretary for the month.

President's Corner

December, 2001

Another great year for Buckeye TRIUMPHS!

We have a lot to remember and a lot more to be thankful for this year. My thanks to the many volunteers who enable us to enjoy the friendships we will always remember, the technical and personal support we need and give, the driving events that challenge the driver and the navigator and the pure fun we all looked for in owning our own TRIUMPH - TR2 through TR8 or any other model we could afford to drive. Now, of course, being a member of TBDCITL, the best damn Triumph club in the land, is icing on our cake.

Our final drive in November provided a fair measure of things to remember and a thing or two we hope some folks will let us forget. The day was beautiful, the drive

challenging and the meal very filling. Well -maybe I could make room for another piece of that peanut butter cream pie! Hey, Sam, pass the pie. There has to be some left down there, right?

OK, who really saw it, the highest point of earthly elevation in Ohio? I thought so!

John Schilling's maps/directions were 'Rally Quality'; Thanks John, we wish you were there to enjoy the chatter on the FRS units carried by some of the helpful and helpless. We decided to save the return leg for another 'Rally Challenging' run when we go back for more Peanut Butter Cream Pie. Sam, you can lead us out there next spring when you are ready to let loose The Beast II in the search for The Pie!

This will be a short one from me this month, as I try to meet the Editor's - 'It's Time Again' call. It is getting late and I meet the neurosurgeon early tomorrow morning for a little R & R on my personal frame. The repairs will lay me up for awhile and I'll miss the meeting on the first Tuesday evening in December at the 'Pizza Place'. Let's round up the usual suspects, select our 2002 Officers and finalize our Holiday Party plans for January. See you in January! Be there or Be elected I was told!

Thanks for your continued support and participation. Help us in planning for next year's activities and more driving events in 2002. TRA and 6-PACK will need all of us; so plan to- JUST Do IT. Do IT with Buckeye TRIUMPHS - Go BUCKEYE TRIUMPHS and Go BUCKS -Can you believe those Bucks in Ann Arbor!

Bob Mains bob.mains@ode.state.oh.us

Officers and the Fine Print

The Buckeye Triumphs Newsletter is a publication of Buckeye Triumphs, and the content herein is not officially endorsed by the staff or members of Buckeye Triumphs, their families, or lawyers. If you decide to follow the advice of anything inside this newsletter, you do at your own risk. We are all adults here, so if you do something stupid, own up to it and don't sue the club. Heck, we don't have any money anyway...

Club address: Buckeye Triumphs, P.O. Box 584, Lithopolis, OH 43136-0584

Annual Dues: \$20.00 General email: buckeyetriumphs@ameritech.net

Web Site: <http://www.BuckeyeTriumphs.org>

Our current crop of Buckeye Triumphs Officers include:

President: Robert Mains (614) 890-7767 bob.mains@ode.state.oh.us	Vice President: Ryan Miles (740) 587-4179 rihmile@yahoo.com
Treasurer: Jim VanOrder (740) 967-2110 vanordergj@core.com	Events: John Huddy (614) 846-2321 jhuddy@columbus.rr.com
Newsletter Editor: Bruce Miles (740) 587-4179 bmiles@intinfo.com	Secretary: Becky Hartley: (740) 753-1066 jhartley@frognet.net

Technical Consultants:

TR2's & 3's: John Hartley 740-753-1066 email: jhartley@frognet.net or John Huddy 614-846-2321 email: jhuddy@columbus.rr.com
 TR-4's: John Thomas 614-855-4175 or Bruce Clough 937-376-9946 clough@erinet.com

TR250, TR-6: Robert Mains 614-890-7767 bob.mains@ode.state.oh.us or Jim VanOrder 740-967-2110 vanorderj@core.com
 Spitfires and GT6: Doug Braden 614-878-6373 braden.13@osu.edu ,

TR-7 & 8's: Ron Fowler 614-833-6885 tr8@msn.com

Affiliations: 6-Pack Chapter -- Center of Triumph Register of America -- VTR Zone Member

A Chronicle of Triumph: how I became addicted

HO HO HO, Happy holidays everyone. Think of how different this year has been from last November. At this time last year the TR's were tucked safely away from the yuletide road salt, and so far this year the cars COULD still be out! Speaking of cold weather driving, the November driving event was excellent as usual. Quite a few people got their cars out of the garage one last time. It was an enjoyable route with a nice meal at a family style Amish restaurant. I wish I could have brought my TR6, but it was laid up in the garage after developing a rather large oil leak (how embarrassing).

I am getting set up to weld the new parts into my 250 frame, we should have electricity for the welder in the barn at the end of this week. I will be upgrading the suspension to Nylatron bushings, and adjustable gas shocks front and rear (I have only one filling and I'm only 17, so it really doesn't matter how harsh the ride is☺). I have also decided to change some internal engine stuff, like 11.5:1 compression and a high lift camshaft. I learned from the last engine I built, and this time I will most definitely be doing some modifications to the head and porting. To everyone that I told I would build a stock TR250: I'm sorry for being a hypocrite, but it just wasn't me and I will most definitely have more fun modifying the car. None of the modifications will be permanent to the car itself, and it will be sooo much more fun to drive.

As it stands right now, I am going to put all my efforts into the 250, and try to assemble it before 6pack Trials in Granville. My hope is to work on the reliability of my 74 this winter and drive it for the duration of next summer (before I go to college). We'll see what happens, and as always I will keep you apprized. Happy holidays!

Ryan rjhmile@yahoo.com

Notes from Nelson

Editor's note: Nelson has been busy as usual – be sure to see the holiday gift suggestions in this installment. Those of you that saw him in November noticed the new beard – I think he was out looking at red suits last week.....

Website: Our new host (sunspothosting.com) is working out really nice. This is my son's company. He is donating

the service and expects the site to be used to test new features from time to time. The latest such feature is really neat statistics tools. We get more data than I can possibly use. That said, I think I've investigated nearly every data item. We now present statistics summaries under the **Statistics** button. This is only the top layer, but still very interesting.

An aside ----- my son says that after watching the Buckeye Triumphs working on their cars, he thinks we would be very competitive at junkyard wars. This may be his response to my bad mouthing the VWs carcasses he had around here; they leaked more fluids than any TR.

Parts Car Classified: The statistics indicate that the classified page is one of the most frequently visited. I've successfully sold a number of items from the ads. In several cases folks have emailed and asked what other parts I may have. Those of us in Granville are fortunate to have a Triumph salvage yard nearby (another reason to have the 6Pack Trials here). This got me to thinking --- many of us have parts cars --- some have a whole fleet of them. (*Editor's note – I resemble that remark*) I'm suggesting that we put a table in the classified section listing parts cars, the type of parts still available and email address. This would be organized by car model and year. This could be a service to the Triumph community, put a few bucks in our pockets and maybe reduce the pile of parts that we'll never use. (There is however a risk that the spouse takes an inquiry when we're out of town and, being unable to differential between our prize possession and the parts car, sells parts from the wrong car.)

LITA: I've exchanged a few emails with the Webmaster of the Long Island Triumph Association as we've listed each other's sites on our lists of links; suggest you visit their site (<http://www.longislandtriumph.org>) and check out their TR6 + 6 project.

Holiday Gifts: Many of us really hate to shop. It's very difficult to figure out what to buy, where to get it, etc --- and in my case, all on the 24th. There was a high point last year when I wandered into Victoria's Secret. Didn't make a purchase but had a vision more exciting than sugarplums for a half an hour or so till a couple of women shoved in front of me at an Elder Berman checkout line.

This year I'm making a list of Triumph related items for those that usually buy me neckties, sweaters and socks. Have enough of those to last several lifetimes. The motivation is of course to lessen the burden on those who buy me gifts. Included in the list are directions about where the items can be purchased – in every case via phone or Internet. I thought it might be nice to pass on some ideas for use by your significant other. After discussing this note with Bruce, he suggested that we put the list on the website as a public service and keep it year around. This has been done – click Gift button. We'll be adding items so one should check it from time to time. Some items one might consider for the Triumph nut:

TRF gift certificate (1-800-678-8764): These certificates can be purchased now for 85% of face value and can be used

during the sales to get an additional discount. I don't see how a wise woman can pass up this bargain.

Books are a lasting gift. Amazon.com (www.amazon.com) stocks many (search by vehicle model: Triumph Spitfire, etc.). For example from my list:

- The Complete Official Triumph Tr6 and Tr250, Model Years 1967-1976 : Comprising the Official Driver's Handbook, Workshop Manual by British Leyland Motors (Paperback - December 1978)
- How to Restore Triumph Tr5/250 & Tr6 by Roger Williams (Paperback - September 2001)
- The Haynes Weber Carburetor Manual : Zenith Stromberg-Su Carburetor Manual (Haynes Techbook Series) by A. K. Legg, Don Peers, Robert Maddox, John H. Haynes

However, one book I found when searching on carbs that I don't want: Good Carbs, Bad Carbs: An Indispensable Guide to Eating the Right Carbs for Losing Weight and Optimum Health

Tools and other support items are always appreciated. One good source of inexpensive reasonable quality measurement tools is Enco, (www.use-emco.com 1-800-873-3262). Measurement tools a Triumph Enthusiast might find useful are:

- 0-6 inch Dial Caliper # AN610-5025 \$14.99
- 0-1 inch Outside Micrometer #AN600-0021 \$16.95
- 0-1 inch Dial Indicator # AN605-4070 \$7.99, also need Magnet Base #AN625-3040 \$11.89 for most Triumph applications.
- Crescent Ratcheting Combination Wrench Set. A friend gave me a set of these last year --- love them. They are fairly rugged and ratchet with a very small arc. Set of four (3/8, 7/16, 1/2, 9/16) AN890-9653 \$24.95 @ Sam's Club
- 2 – 6 inch Dial Bore Gauge #AN612-5920 \$49.95

Harbor Freight (www.harborfreight.com 1-800-423-2567) is another favorite for tools. These are mostly made in China and suitable for the backyard mechanic (I would avoid their socket sets). They have free shipping on orders over \$50 so if you buy something heavy for \$40, you might save money by purchasing small items to get total over \$50.

Some suggestions:

- Digital Multimeter (For those Lucas mysteries) #37772-1VGA \$29.99. (#33499-5VGA at \$9.99 is less expensive alternative.)
- 9 Piece Wobble Extension Set (Use sockets at up to a 16° angle) #31203-5VGA \$9.99
- The following can be used as a substitute for virtually all Churchill Tools: 5 Piece hammer set (8 to 32 oz) #36523- 0VGA \$9.99 and 16 Piece Punch & Chisel Set #00249-8VGA \$7.99

- Set of two 3 Ton Jack Stands #38846-7VGA \$17.99
- 2 Ton Compact Floor Jack #36119-1VGA \$19.99
- 2 Ton Foldable Shop Crane (engine hoist) #35915-5VGA \$249.99
- 4 TON Portable Hydraulic Kit #44899-0VGA \$89.99
- 115 pc Drill Bit Set #01611-2VGA \$39.99
- 12 Ton Shop Press # 01667-2VGA \$109.99
- 6 inch Bench Vise (great to hold U joints for beating). This thing weighs 74 pounds. #03796-3VGA \$49.99
- Unibit Step Drill – a tool that drills round holes in sheet metal 3/16 to 7/8 inch diameter, #5751-2VGA \$28.99
- 12 speed Bench Drill Press #31325- 3VGA \$125.99
- 20 Gallon Parts Washer #7340-3VGA, \$89.99
- Abrasive Blasting Cabinets are great too --- search the Harbor Freight site for "Abrasive Blasting Cabinet or Blasting Cabinet" and select the largest size that will fit on the property.
- Harbor Freight has a neat Portable Garage #42211-5VGA for \$259.99. This is a great gift for the Triumph Enthusiast --- telling them "here's a new parking spot --- go find something to fill it".



I prefer Craftsman (Sears) Sockets and Torque wrenches (both 3/8 and 1/2 inch drives are handy).

Handy tools that can be obtained at Auto Zone, Advance Auto Parts, etc:

- Timing Light
- Vacuum Gauge
- Compression Test Gauge

If you really want to make the backyard mechanic happy, contact Bruce Clough to learn about the Backyard Buddy and other lifts.



\$2795 **M6**
6000 lb. lifting capacity

An Air Compressor and air tools will delight any TR enthusiast. The proposed use should be carefully considered before selecting a compressor. If anticipated, then a 7 CFM delivery at 90 psi one intends to blast, delivery at 90 psi is smaller units cost larger about \$600. If then a two-stage unit at 90 psi or greater excellent choice. I cylinder single stage



blasting is not compressor with 5 to psi is adequate. If then a 12 to 15 CFM desirable. The about \$400 and the money is no object, that delivers 17 CFM pressure is an purchased a 3-unit that delivers 18.5

CFM at 100 psi for \$599 at TSC this past summer. Caution, the horsepower ratings can be very misleading, use the air delivery specifications to compare units. Lowe's and farms stores such as Quality Farm & Fleet and Tractor Supply Center (TSC) are excellent sources of compressors.

Once one has a compressor, then the tool hunt is on. Jay Welch posted the following list of his pneumatic tools with the priority of use. Most these tools can be purchased from Harbor Freight (see above), Lowe's and the Farm supply stores.

- Eye protection
- Pressure regulator
- Moisture filter
- 3/8 inch ratchet
- Blow gun with extension made out of flexible steel brake line...this works great to get at tough places
- 1/2" impact wrench
- Air chuck for tires
- Cutoff tool
- Grease gun - this is a goodie. Got it at WalMart for less than \$30
- Rapid-Reel hose reel
- Die grinder
- Chisel/hammer for exhaust etc
- Body saw - 10,000 strokes per minute - great for cutting panels
- Sandblast cabinet - Chinese
- Paint spray guns
- Pressurized sand blaster - Chinese
- 3/8 drill
- Dual action sander

Gifts for women: Sure wish I had some advice for guys as to what to buy the non-Triumph enthusiast woman. If any of you guys have some suggestions, please let me know. And men, one thing I'm pretty sure of ---- if you're the car nut, suggest you not buy her a torque wrench hoping she will let you use it.

Irritated reader: A few weeks ago the officers, newsletter editor and I received a very strongly worded email from a person that was very upset that we reproduced something that he put on the Internet. Part of the email was:

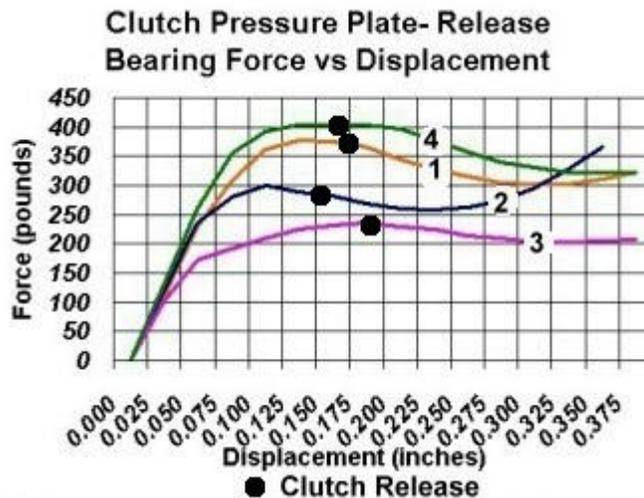
I recently performed a search for "Laycock" and came upon the Buckeye Triumphs Club newsletter. As impressive as the newsletter is, I was very disappointed to ready my technical article which was published without my permission. As a professional curtsy, my permission should be requested. I believe your publication of this article is called plagiarism. I am not as concerned with plagiarism as I am with the lack of my opportunity to response to your article.

I chose to not include the entire email or identify the individual here so as to avoid embarrassing him.

As to the charge of plagiarism, The Webster's New Collegiate Dictionary defines plagiarize as "to steal and to pass off (the ideas or words of another) as one's own. Clearly that didn't happen. The stuff is freely available on the Internet and I clearly identified the source and author. If he is proud of what he wrote, our reproducing it was a complement and I would think he should be pleased. As to giving him an opportunity to respond, I made two attempts to contact him at the time with no response. In hindsight, I should have noted that he doesn't respond to email.

I sincerely apologize for upsetting him. We went back to the website source file for that newsletter issue and removed his note so that no one else will find it there.

More Clutch Measurements: Last month I asked folks to let me borrow and measure any LUK and Sacks pressure plates they have. John Huddy came through with a lightly used LUK that was manufactured in the early 90s. Before measuring the LUK, one of the clutches measured earlier was measured again to verify everything was the same. It wasn't --- the measurements were different at the larger forces. Investigation revealed that this time I used a board under the flywheel. Apparently the scale was distorting slightly during the earlier measurements because the force was concentrated in one spot. The board between the flywheel and scale distributed the force. The previous measurement could be reproduced (approximately) if the board was removed. I measured all the clutches again with a board between the flywheel and scale. The corrected measurements are shown in the graphs below



1 - New Borg & Beck replacement, AP #HE5132Q

- 2 - Original Laycock (used)
- 3 - Remanufactured early Borg & Beck (used)
- 4 - 1991 LUK (used)

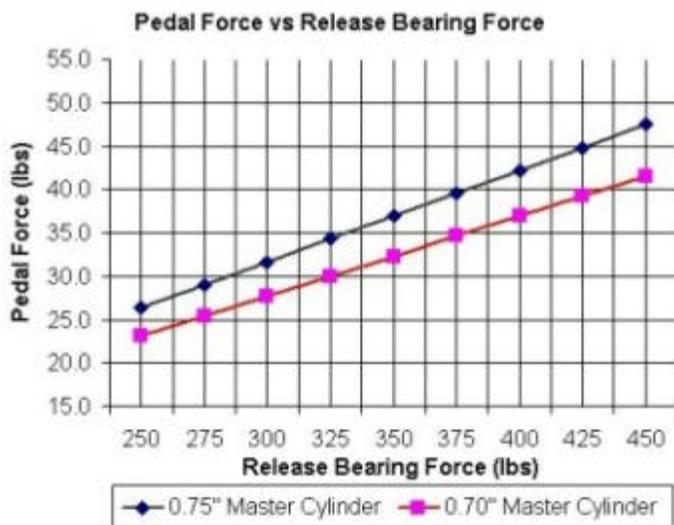
LUK is a German company that took over Laycock in 1987. I expected the clutch to be similar to the original Laycock and not quite as stiff as the Borg & Beck clutches. Turns out that the LUK clutch is the stiffest I've measured so far --- see graph. The LUK curve is flat on the top because the scale bottomed at 403 pounds. From the shape on the graph it looks like the maximum force is about 425 pounds.

I'm still looking to collect data for the Sachs and the original Borg & Beck pressure plates. Hopefully Ryan will find one of the original B&Bs in his fleet of TR250s.

Clutch History: I've been told that Triumph made an effort to reduce the pedal force required to operate the TR6 clutch during the early 70's. The TR250 and early TR6 used the 0.75 inch diameter master cylinder. The master cylinder was changed to 0.70 inch in mid '70 (after body number 52951). The smaller cylinder requires 87% of the force of the larger cylinder. A down side of this is that 114% of the pedal motion is required to produce the same release bearing motion. This is a force vs. motion tradeoff that can cause a problem if there is excessive wear in the clutch pedal mechanics.

The Borg & Beck brand pressure plate was fitted to the TR250 and early TR6 while the Laycock brand was fitted to the later TR6s. I don't know when this switch was made. Literature during the middle 80s when both types were still available stated that the Borg & Beck brand was somewhat stiffer. I used both of these brands with both sizes of master cylinders during the 80s. While the Borg & Beck felt somewhat stiffer, the difference didn't seem substantial. Maybe I have an *insensitive* leg.

A graph of the relationship between the pedal force and pressure plate clutch force is on the website (under technical-clutch-clutch calculations) and reproduced below. This assumes no friction between the pedal and release bearing.



Pedal Force Measurements: Ryan & I recently compared the pedal force on his clutch (LUK with 0.75 inch MC) with his dad's (0.7 inch MC with unknown clutch) and with my two. Ryan's, while smooth, seems much stiffer even to an insensitive leg. I discussed this with Dick Taylor and he suggested that we measure the force by placing a stick between the pedal and a bathroom scale and then pushing on the scale to measure the force.

My daughter Kimberly was visiting so I elicited her help both for her engineering skills as well as her *woman's* view of the various clutches. All clutches exhibited similar characteristics with the pedal force increasing to a peak and then decreasing. We tested my TR250 and TR6 several times and developed an impression before making the measurement. (We didn't want data to influence our impressions).

In each case the clutch was operated at least 20 times to make sure it was loose before taking the measurement. Several measurements were then made with the scale. This is not exact because the measurements varied a few pounds.

76TR6: This has a nearly new Borg & Beck (AP #HE5132Q) with the standard 0.7inch master cylinder. We measured 42 pounds peak pedal force. The earlier graph shows that these clutches have a maximum force of 375 pounds so from the Pedal Force graph we would expect a peak pedal force of about 35 pounds with no friction. There are a number of friction points in the system and I expect the friction to vary widely from car to car. If we use this car as the nominal, then a 25% increase in pedal force due to friction might be a good guess. Kimberly thinks this clutch is really wimpy --- it gets very soft after the maximum force point. This clutch is the one that information on the Internet suggests is so stiff that it is the cause of broken pins, busted hydraulic hoses, ruined release bearings, broken knees, etc.

68TR250: This has a OEM style Borg & Beck with less than 10K miles use and the standard 0.75 inch master cylinder. We measured 57 pounds peak force on this clutch. About half the difference between the 57 pounds here and 40 pounds on the '76 is due to the difference in master cylinders. Both clutches have been out within the last 5 K miles and are freshly lubricated (you might recall that the TR250 had the sticky clutch disease). Kimberly much prefers this clutch. She says it has the proper firm feel one expects from a sports car. I really didn't see much difference between the '68 and '76 till her observations. I now think the '76 is wimpy too (the power of suggestion).

94 Ford Ranger: Before heading to the Miles' we decided to measure my son's Ranger 4WD pickup with the 4L V6. We measured a peak pedal force of a little over 60 pounds. It seemed a bit stiffer than my TRs.

Ryan's '74TR6: Ryan has a nearly new LUK clutch with 0.75 inch master cylinder. We measured a peak force of about 90 pounds. This clutch feels much stiffer than the three we tested at my house. It does however feel smooth. Recall that the single LUK I measured is the stiffest clutch

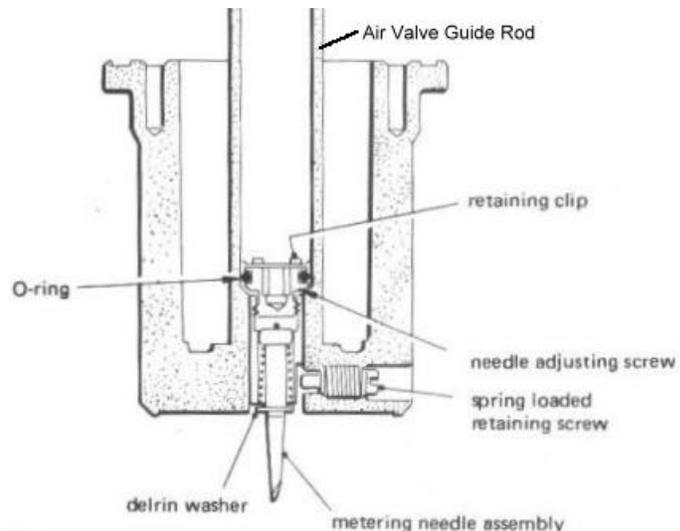
we've seen, but not nearly stiff enough to produce a 90 pound pedal force. My guess is that something is binding somewhere. We'll report if Ryan finds a problem in this area, although he's not concerned --- he thinks the clutch is just fine.

Bruce's '72TR6: This has the standard 0.7 inch master cylinder, the type of clutch is unknown. We measured about 50 pounds peak pedal force. This seemed really soft after trying Ryan's clutch.

Measure your clutch: You can measure your clutch pedal force by placing a strong stick (I used a 42 inch length of 2X4) between a bathroom scale and the clutch pedal and then push and observe the maximum force. Our recent measurements suggest less than 40 pounds is overly weak and wimpy, 40 to 60 pounds a typical firm TR clutch, and over 60 pounds a really stiff clutch. Caution, the measurement may change your opinion from satisfaction to displeasure.

Sticky Clutch: Recall that we've found that one cause of the sticky clutch is the sharp edges of the release bearing sleeve grabbing the front cover. The amount of grabbing force is sufficient to cause the sleeve to hang when engaging, essentially equaling the force to release the clutch --- 300 to 400 pounds. Both Murry and my sticky clutches also exhibited the stickiness when releasing the clutch (pushing the pedal). We didn't measure the additional force due to the stickiness but the difference before and after was significant --- much more than I associated with the different size master cylinder or the different brand pressure plates. We now realize that increased clutch pedal back force, especially if it feels rough, like there's sand in the works, might be the precursor of a sticky clutch. It might also strain clutch fork pins, hydraulics, release bearings and pedal mechanics much more than the variations between the different brand pressure plates. Also, recall that the clutches exhibited the stickiness only when the engine was running.

Replacing Fixed Needles with Adjustable Needles in ZS carbs: As most of you know, Ryan has a fleet of TR250s. He plans to build an enhanced engine using triple ZS carburetors (unless he finds a turbo). Unfortunately, all his carbs have fixed metering needles and he prefers to have some adjustment capability. I volunteered to see if there was an easy way for Ryan to modify his TR250 carbs to accommodate stock adjustable needles. The next photo shows the air valve with adjustable needle.



The photo above shows the adjustable needle with needle retaining screw, adjustment screw, adjustment screw retaining clip and an old damaged O ring that fits in the slot on the adjustment screw. The photo below shows a comparison of the adjustable needle with the larger carrier and the fixed needle with the smaller carrier. The actual needles are identical.



Needle Recess: Careful inspection of the fixed needle air valve revealed that if the needle recess were enlarged and the closed upper portion drilled out, this area of the two valves would be identical. Of special importance is that the position of the shoulder where the lower side of the lip on the adjustment screw rests is the same in both the adjustable needle air valve and the fixed needle valve.



The photo on the left shows drilling out the needle recess with a Letter O drill (0.316 inch). A 5/16 inch (0.312) was tried first but the hole was too snug for the needle carrier. The adjustment screw slid down into the valve from the top with no problem. A 5/16 inch steel rod was used to tap the retaining clip into position. The needle also slid into position with no problem. These were

then removed so that the retaining screw could be dealt with

The Problem -- the Needle Retaining Screw: The fixed needle is secured with a 8-32 retaining screw that is threaded into a hole in the side of the valve guide rod. A retaining screw also secures the adjustable needle. However, that screw is 10-32 and threads into the aluminum air valve just beyond the valve guide rod. The setscrew used for the adjustable needle has a spring loaded plunger end that fits into a slot in the side of the needle carrier. The spring holds the plunger in the slot to keep the carrier from tuning as the adjustment screw is turned. However, the pressure is limited so the carrier can move up and down. The slot in the carrier runs only part way up the side of the carrier so that the plunger also keeps the carrier from dropping out the bottom of the air valve when the adjustment screw is turned all the way out of the carrier. This is a simple but very effective design. The left photo below shows the retaining screw and the right sketch shows a cross-sectional view of the screw with the spring on the inside.



The problem is that the hole for the retaining screw in the side of the fixed needle air valve is ~7/32 (0.219) inch. The correct tap drill for the 10-32 screw is Number 21 (0.159 inch). That is, the hole is too big to thread for the screw. The only solution I could think of was to press a short piece of aluminum into the hole and then drill and tap it 10-32.

The Fix: I first secured the air valve in a vise. A drill was inserted in the hole as a guide to help align the hole vertically. Next, the aluminum part of the hole was drilled 7/32 inch. The hole is nearly that size so only a thousands or so was removed. The drill was not run though the steel air valve guide rod, just through the aluminum part. Next the outer ~0.3 inch depth of the hole was enlarged with a Number 1 drill (0.228 inch). A 15/64 drill can be used if a Number 1 drill isn't available.



Next, a lathe was used to fabricate an aluminum plug. The plug outer diameter was turned to 0.224 inch. The center was drilled 0.159 inch with a Number 21 drill and the plug was cut to ~ 0.3 inch length. The plug slid in the first ~0.3 inch depth and then encountered resistance. The plug was then driven into the final ~0.3 inch with a punch.

The hole in the plug was then taped 10-32. A tapered tap was used first and then a flat bottom tap made by grinding off the end of an old tapered tap. The hole was threaded in the aluminum plug but not through the air valve guide rod. The thread depth was tested with a screw to insure that it was deep enough for the pin to enter the slot in the slot in side of the needle carrier but no so deep that vertical adjustment is restricted. I used the flat bottom tap to fine tune this depth by alternating the tap and the test screw.

The final results were that the modified valve is essentially identical to the valves originally made for adjustable needles.

The Parts: The final step was to figure out where to get the parts. The following summarizes my research.

Part	TRF	Moss	Victoria British
Needle (B1AF)	\$27.50	\$11.95	\$17.95
Adjust Screw	\$5.95	-	\$5.95
Adjustment Screw Clip	\$0.79	\$0.65	\$0.60
O Ring	\$1.10	\$0.75	\$0.60
Needle Retaining Screw	\$3.25	\$3.85	\$3.95

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Late TR Guy

December 2001: By Bruce Clough (clough@erinet.com)

The Continuing Adventures Of...



Last Month's Fun Continued

Okay, so where was I? Oh, yeah, just put the GM distributor on it. Did I mention I put it on, fired the car up, and it backfired and generally complained about running? I didn't? Did I write about setting the idle timing at 1300 rpm to 8 degrees BTDC? I didn't? Did I write about it probably needing more advance but I want to wait until hot weather (70 plus) arrives again.? I didn't? Wow, I must be getting forgetful in my old age.

Right now it runs fine, which means it's time to take it all apart again to replace the front engine seal that's leaking more oil than the Exxon Valdez (but at least it wasn't in *Waterworld*...). I'm also trying to trace down different carb needles as well as polish the valve covers.

At least I'm having fun.

Or at least I think I was. Since I wrote the last paragraph I have pulled off the front cover of the engine and have discovered that the front seal is bad (knew that), it's worn a groove in the crank pulley extension that will have to be sleeved (didn't know that). The casing has also corroded through to a bolt hole, the source of my water leak. Off to the heliarc!

(Update – the cover can be fixed, but the front pulley extension is becoming a bit of a problem. The best fixes the mechanics can come up with are to shim the shaft out a bit, or don't push the seal all the way home!)

I've also got the steering rack off since it was another source of spots on the garage floor. I've got a TR7 rack that John Huddy loaned me and I'm putting that in place of the power steering system. Since the TR8 engine is only slightly heavier than the TR7, and (for now) since I'm staying with the stock tire size, steering shouldn't be a problem. Heck, if I can steer a TR6 around this will be a breeze.

Technical Tips: Breaking Loose Front Ball Joints

What follows is a typical thread on a typical day for the Wedge email list. Ask a question and receive a thousand opinions... Questioner and repliers will remain anonymous to protect the guilty, especially if you try this at home (at your own risk, I don't guarantee any of this to work)

Question:

I started replacing my front springs and shocks. I got jas far as the ball joint but don't seem to be able to separate the stub axle from the ball joint.

There isn't enough room to back it up and take a good whack with a hammer. The ROM does not indicate that it is necessary to remove the hub and splash plate but there might be more room to get a swing if I do.

Also I had bought the ball joint separator from VB, thinking this would make the job a lot easier. However, there is no way I can see how to make this tool work. There just is not enough head room, between the top of the ball joint and the bottom of the strut to insert the tool.

Does anybody have any tricks to get this apart?

Reply 1

What I do is keep the steering bar or what you call it bolted on to the strut assembly and then back the ball joint nut up and it usually hits that bar and pushes the ball joint out the bottom, if you need a little extra use your favorite wedge/screwdriver to take up the extra space then remove the rest of the stuff. I put a small bottle jack between the frame and sway bar to jack the bottom suspension arm down with out removing the sway bar. Real simple, I can R & R a strut in no time.

Reply 2

When I did this on my 7 I had to get a pickle fork. Most people at the auto parts store will know it by that name. The tool looks like a fork with two prongs that when viewed from the side looks like a wedge. You drive it between the ball joint and the axle with a hammer and they just pop apart. Be careful not to drive the fork through the rubber boot though, unless you need new ball joints that is.

I also bought that tool from VB and out of the three cars that I have tried using it on I don't think it worked once.

Reply3

It is not necessary to have the spring in place. A couple of good whacks should loosen it. If you don't have room to swing a hammer you can place a 10-12" 1-inch bar stock where you would have hit it and smack the end of that. It's probably best if someone else holds the bar. Also an air hammer with a flat faced chisel piece will do the trick. Ball joint separators will almost always tear the rubber dust gaiter but its usually an effective last resort. If you can't fit the whole tool in there can you get it so one prong will wedge in. That should work

as well but is trickier. Sometimes a 1" chisel is better for this as you won't be hitting it off center.

Reply 4

I have used 3 methods in the past, the crudest is a fork which does the job but more often than not destroys the ball joint gaiter in the process. The second is a pivot lever type separator (like enlarged pair of pliers) which fits in confined spaces.

The neatest is a trick I picked up from an old hand, take 2 hammers one approx. 4lb and one approx. 2 lb. hold one behind the casting where the ball joint passes through (i.e., perpendicular to the axis of the threaded part) and strike the other side, the taper then just drops out, this works very well on track rod ends. I believe the theory is that the blow elastically deforms the hole by a small amount and pops the taper out.

Reply 5

If all you are replacing are the springs and shocks then there is no need to remove the ball joint. The spring comes out with the lower spring pan after the shock is out. All you need is a spring compressor.

But if you really need to take the top of the vertical link loose consider removing the four bolts that secure the upper control arm. Unless you are replacing the ball joint itself you are better off leaving it unmolested.

Reply 6

Unless you are wanting to replace the ball joints, leave them alone and detach the control arm from the subframe which will allow you to remove the strut assembly with the control arm attached. You can then service the springs and shocks and reinstall the entire assembly. If you try to remove the ball joints while they are in the car, you will ruin them. (don't ask how I know this) Make sure that the weight of the car is on the wheels before you give the control arm to subframe bolts and nuts their final tightening. Don't do it while the car is up on stands.

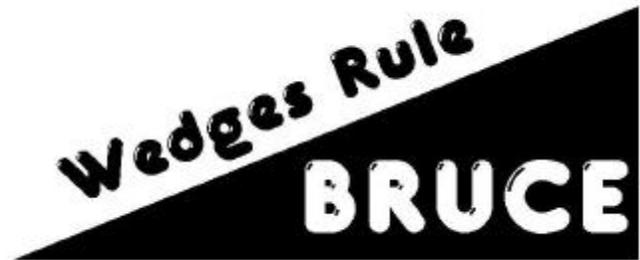
Reply 7

And yes you can just replace the boot without having to replace the ball joint. However I recommend checking the joint to see if there is rust under the boot as now is the best time to replace them and they only cost about \$30 for the pair.

Reply 8

The pickle fork will not damage the ball joint rubber, if you grease it first. A mechanic told me this as I was walking out of "Charlie Brown's" brandishing my new purchase and I've never had any trouble. As to beating the joint on the side with a hammer...in my experience, that's down to luck. Sometimes the joint will drop out first time, but sometimes never. If you hit it often and hard enough, you'll probably miss eventually and hit & split the rubber anyway. The fancy tools (I hired one) just seem to jump off as you apply pressure. The pickle fork is cheap, lasts forever and always works. Just grease it first

So, who's right? I don't know, but since I'm taking that leaky power steering rack of the TR8, I'll let you know next month!



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