Z-Car Club of Washington
18505 Alderwood Mall Pkwy. Suite #
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Lynnwood, WA 98037-8013

TO:

1994 Nissan 300 ZX® 2-Seater
with optional T-Bar roof

The NewZletter

of the Z-Car Club of Washington

Vol. XIX, No. I August, 1997

Next Meeting: Port Townsend Fairgrounds • 16 August afternoon

YUTAKA KATAYAMA, THE FIRST PRESIDENT OF NISSAN MOTOR CORPORATION U.S.A. ALWAYS ENCOURAGED PEOPLE TO "LOVE CARS, LOVE PEOPLE, LOVE LIFE."

– What's Inside –

A Message from the President

A couple of issuance's of "Thank-You's" are in order.

First off, in the last couple of months, we have been honored to have both Motorworks Ltd. and Z-Specialties hold tech sessions to further our knowledge of our passionz. Thank you! Were it not for the aid of your expertise our Z's may not be in the shape they are today.

Secondly, we must issue Parts Manager Kent Roy at Younker Nissan a Thank You! While Jim Tomisser was looking for prizes for the event that our club is hosting at the Port Townsend event he asked if they had any Z key fobs and how much they were. After Jim explained what they were for, Kent graciously donated a couple of them to the club. Thank you!

On a personal note, recently I have begun doing the physical fitness thing and have noticed some tremendous changes that I have found to be Z-worthy.

Since I have quite working full time and have gone back to school I have not been able to drive the Z as much as it should be; basically from home to the college and back. So, in a manner of speaking, the Z has been lazy.

Well, since I have been going to the athletic club most mornings, I have been doing quite a bit more driving – although by no means what it used to be. That being the case I have noticed that the Z has been having a bit more pep.

Although I am by no means trying to imply that everyone should exercise. However, who was it that said that exercising did not have its benefits?

–Michael

The NewZletter
A monthly (usually) publication of the Z-Car Club of Washington

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ZCCW Application for Membership

Annual dues: Single = $25; Family = $30; Associate = $15*
Prorated by quarter for NEW members ie:

Single:	[Jan - March	$25]	[April - June	$18.75]	[July - Sept	$12.50]	[Oct - Dec $ 6.25]
Family:	[Jan - March	$30]	[April - June	$22.50]	[July - Sept	$15.00]	[Oct - Dec $ 7.50]
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*Associate membership is for those whom it would not be feasible to be able to attend any meetings or events.
Associate members in the United States will receive the printed version of The *NewZletter*

To join, fill out application and send with payment to:
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☐ Update?

Membership – Type –
☐ Single
☐ Family
☐ Associate

Name(s): _____ Birthdate(s): _____

Address: _____ City: _____

State: _____ ZIP: _____ E-Mail: _____

Phone: _____

Z-Car 1: Color: _____ Year: _____ Model: _____

Z-Car 2: Color: _____ Year: _____ Model: _____

Z-Car 3: Color: _____ Year: _____ Model: _____

What area(s) of the club are you interested in?

Technical/Mechanical: _____ Showing my Z(s): _____ Autocross: _____ Rallying: _____

Cruises: _____ Other: _____

Do You Have Z Parts or Z's For Sale? Are You Looking For That Certain Part or Z?

Advertize them here in The NewZletter!

Call Michael at: 360.424.8643
email: mswhite@sos.net

1982 Datsun 280ZX, Sapphire Blue paint, Antera Opus 1 wheels, Michelin Pilot tires, ground effects, rear fin with integrated third brake light, Pioneer detachable CD Player with MTX Band Pass box, Clifford alarm with keyless entry, Brand new (carpet, rubber seals, knobs, locks, windshield), engine in near perfect condition. Very clean and sporty customized "Z". Asking $4,000 OBO. Call (425)349-5133, leave message. Email at SeaTra@juno.com or rkk@cryocell.com.

I am selling my 1983 280ZX. I have spent many dollars and hours fixing it up (and loved every minute of it). I am keeping my 240z (the next project) and I am buying a 1990 300ZX Twin Turbo. Here is a list of the upgrades done to the 280ZX since March 1997:

Repleced Rear deck seal (it was rotted and leaking), Replaced various lights, taillight lens, Complete lube job/oil change/radiator flush, New spare tire and cartridge/rear wiper fixed, BRAND NEW STRUTS AND SHOCKS (and 4-whl align), Body work (rust prevention, scratch removal, dings fixed), ** BRAND NEW PAINT JOB (very nice too!), Warrantied for 2 years!, New clutch, master and slave cylinders, New top-of-the-line Sears Die hard battery, Recovered various interior panels with new vinyl, Brand new carpet installed, Repaired Air Conditioning (IT blows very cold), Replaced alternator, starter, and fuel injectors, New spark plug wires, Various screws, plastic pieces, and emblems to perfect the interior of the car.

This car is PRIMO now, and runs smooth and like a dream. There's a lot more, I just can't think of them while I'm writing this. Not to mention all the TLC I've put into the car. :). E-mail me at gcagle@lightningweb.com if you want to make me an offer for it. You can also call me, Greg, at 213-0964.

1981 280zx turbo, automatic red and silver with red interior. Was in a roll over accident. Lots of good parts, except for major body panels. Asking $500 minus rims and tires. The car has less that 10,000 miles on new exhaust, turbo unit and rebuilt head. I also have a set of new injector gaskets still in the package for the car. I even still have the stock stereo!Tom 485-0412 eves

Analysis of the Early Z Chassis

By James Lux

The following early Z chassis analysis has no analog anywhere, to my knowledge. You may well find it to be rather dry and a bit of a tough go, but hang in there: the conclusions are worth the effort.

The 240Z transitioned the mass sports car market from drafty rag-tops to designs possessing a real metal roof. No longer were designers shackled to the puzzle of creating a rigid structure with a huge hole in the top. Now they could use the roof structure to "mend" the cockpit hole and introduce greater depth—and therefore strength—into the structure.

The early Z was of unit-body construction. Rather than employing a separate, heavy frame to carry all loads, and then attaching a body (i.e.: MGB-GT or Chevy Truck), the body itself provided the necessary rigidity. Where extra strength was needed to mount suspension or powertrain components, local reinforcements were added in the forms of additional layers of steel sheet, three-dimensional sheet metal stampings, box sections, or subframes.

The Z's designers attempted to provide three types strength: torsional rigidity, bending strength, and load point strength. Torsional rigidity is the body's ability to resist twisting. Poor torsional rigidity results in metal fatigue and a short body life, and also prevents the suspension from properly doing its job. Bending strength refers to the body's ability to support a load suspended between two points, in this case, the front and rear tires. Think about two 300 pound passengers, add a G factor of, say, five for a nasty hump in the road and you get the idea. That's a ton and a half trying to bulge out the floor pan, and something has to resist that force. Load point strength refers to local reinforcements that distribute concentrated loads into the frame or body shell. The engine is the clearest example here, with suspension attach points coming in second.

We'll go through the Z's body, top to bottom and tip to tail, and have a look at what does what by starting with the structural components. But first, so we're on the same wavelength, a little nomenclature.

"Forward" means toward the front, or nose, of the car, or ahead of another component.

"Aft" means toward the rear, or tail, of the car, or behind another component.

"Longitudinal" refers to anything running along the length of the car, i.e.: along the axis between the forward and aft extremes of the car; lengthwise.

"Transverse" means perpendicular to the longitudinal axis, or "across" the car.

"Centerline" means a hypothetical line drawn through the center of the length of an object, dividing "left" from "right".

"Right" and "left" as regards car components are viewed as if facing forward sitting in the driver's seat.

"Outboard" refers to being farther away from, rather than closer to, the centerline.

"Vector" refers to a specific direction in three dimensional space and here refers to the direction in which a force is applied.

"Shear web" refers to a (usually) flat sheet of material which absorbs loads in a single plane, i.e.: within its length and width.

"Bulkhead" refers to a relatively flat metal sheet oriented perpendicular to and located either inside a metal enclosure, or as a cap at the end of two or more pieces of parallel material, providing transverse and/or internal support for the combined assembly.

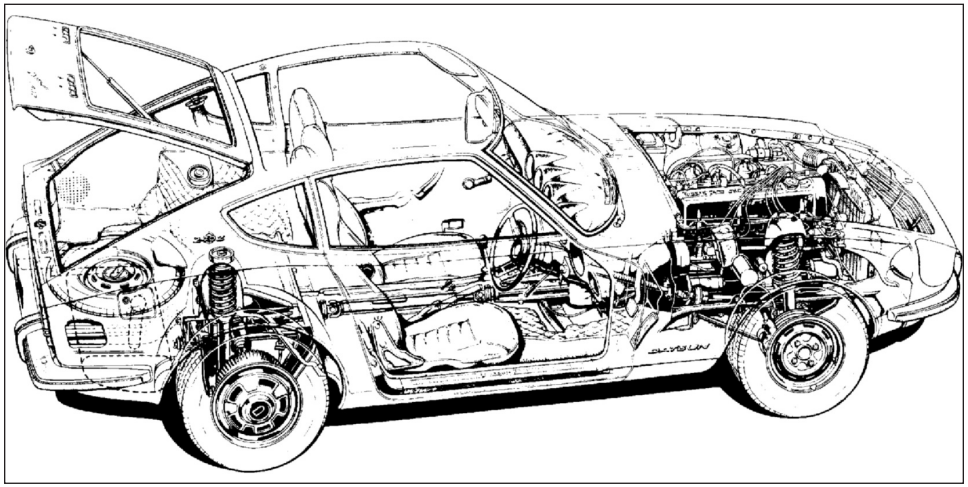
A "box section" is an assembly of sheet metal pieces that, together, forms a rough box shape with length, width, and height dimensions. Box sections may be thought of as conduits for primary load paths, with the surrounding sheet metal being thought of as a secondary load path. The sides of flat box sections act as individual shear webs of the box, held in place by the other parts of the box, providing in-plane strength. Boxes are torsionally stiff and, depending on their shape, can provide strength in multiple directions to absorb multiple load vectors. Box sections need be neither rectangular nor straight and, indeed, come in all kinds of cross sectional shapes. Box sections in the 240 range in size from very small (1-2 square inches in cross section) to very large (50+ square inches).

The Floor Pan

In general, the body is comprised of a floor pan and an upper body assembly spot welded to each other. The floor pan, being fairly flat, provides little torsional rigidity; that will be supplied by the mating of the pan to the upper body. The body pan must provide significant bending strength, however, just to hold its shape and keep the passengers from sinking into the tarmac. Longitudinal strength for the pan is supplied by the rather large transmission tunnel, and by two outboard box sections comprised of the rocker panel on the body exterior mated to a C-shaped piece on the cockpit interior.

The transmission tunnel, by virtue of its depth and nearly vertical sides, affords a great deal of longitudinal bending strength. However, the tunnel's open bottom prevents it from supplying much of any torsional rigidity. Despite being dimensionally much smaller than the transmission tunnel, the door jamb box sections provide both longitudinal bending strength and torsional strength, while also acting as an outboard crash protection beam.

In addition to the transmission tunnel and outboard box sections, the floor pan also derives additional strength from several smaller features. Extensions of the two engine bay frame rails run aft under the cockpit as box sections. This set of box sections adds bending strength and occupant protection. In addition, a shallow X-shaped indentation in each occupant footwell stiffens the expanse of metal under the occupants lower legs. Lastly, the front and rear seat mounts act as formers (partial bulkheads), connecting and stabilizing the vertical walls of the transmission tunnel, the floor pan, and



240Z Emblem Removal

Michael Foerster <mikef@bvc.frco.com> responding to a query on the Z-Car list posts the following as a method for removing the emblems on a 240Z.

cedgar@pacificnet.net wrote:
"I'm getting ready to paint my 240 and I was wondering if there is an easy way or a tool to remove the emblems without breaking off the mounting prongs ?"

I can help you with a couple of them.

On the front hood, put a dowel, or piece of wood on the pins from the bottom, when you lift up the hood, and strike it (gently) with a hammer, going from side to side.

For the side emblems (behind the front wheels) remove the fender liner and put a stick or some other flat object against the pins from the back side and push them out, a little at a time.

For the back deck, remove the panel that is on the inside of the rear hatch and press up on the emblem pins.

The two that cover the holes behind the side windows are metal. Use a screw driver to pry them out. No sweat...

NOTE CAREFULLY which is right and left!! There is a difference! It is set up so that they won't catch the wind when driving. They should be installed with NO opening to the front.

The trim on the bottom of the door windows pops up with a screwdriver pressed int he bottom.

I don't believe that the chrome strips above the side windows comes off.

– Z

Z Door Hinge Repair

Ya know, it's amazing what you can find when searching the Internet for information on Z's. This tidbit comes from our own Paul Richer from a 1993 post to the Z-Car list. – MSW

The door Hinges on the drivers side of my '71 240Z were getting worn out pretty bad. The end of the door, when opened, could be wiggled up and down by more than an inch and when closing the door, it made an unpleasantclunk as it tried to climb the striker plate in search of its latched position. I decided it was time to repair or replace these hinges, so I pulled the door off, removed the hinges, drove the hinge pins out and inspected the parts. I discovered that the pins themselves were badly worn (had about .050 inch worn off the contact area) and the bushings were only slightly worn. I called the local Datsun dealer hoping I could buy just the pins and bushings, but no luck. They only sold the hinges as assemblies and they wanted about $110 for one doors worth. At this point I figured that if I could just find a suitable replacement for the pin, I could reassemble my hinges and they should work fine. I measured the Datsun pins and they were 5/16 inch dia and 2 inches long. I headed into town to our local bolt distributor (Hi-Strength Bolt CO) and sure enough, they had 5/16 x 2 steel dowels (hardened and ground) for about $.50 each. They only problem remaining was how to captivate the new pin. The original pin had a straight knurl on one end to create an interference fit. Since my new pins were already hardened, there wasn't much I could do to them. So, I drilled and tapped one of the hinge halves for a 6-32 set screw that would seat against the pin. I also ground a small flat on the pin for the set screw to seat against. I put everything back together, and the door feels a _lot_ better. Not bad for about $2.00 worth of mate-
.rial

– Z

Pacific Northwest Meeting of the MindZ

The Z-Car Club of Washington (ZCCW) and the British Columbia Z-Car Registry (BCZCR) invite you to the 3rd annual "Meeting of the Mind'Z" in Port Townsend, WA (on the Olympic peninsula), for the weekend of 16th/17th August.

Over the last 2 years, we have had a great time and got to make quite a few new friends with the British Columbia crew as well as a few who traveled up from Oregon (and even as far as Texas).

As in previous years, there will be a caravan leaving from Z-Sport in Everett (3532 Smith Avenue) on Saturday morning (Aug 16). We will leave promptly at 10:00 and head for the Edmonds/Kingston ferry. For those of you going it on your own, we will congregate at the Fairgrounds in Port Townsend, which is a large open grassed area that is clean and well suited for displaying cars and doing lots of Z talk.

This year we plan on adding a couple of group meals and events to make the weekend even more enjoyable. We will have a Shown-Shine and a "Mini Rally" on Saturday Afternoon followed by a Pasta Feed hosted by the BCZCR. Sunday Morning the ZCCW will host a Pancake Breakfast. And for those wishing to get away from the cars for awhile, Port Townsend is a small historic town with lots of eateries, pubs, restaurants and shops.

Accommodation can be by tenting (US$7 per tent/car) at the fairground which has shower, washroom and kitchen as well as barbecue facilities. For those of you wishing to make plans for accommodations other than camping, check out the information on web page: http://www.olympus.net/placesOfInterest/portTownsend/portTownsend.html which has a complete list of motels, hotels and bed & breakfasts.

While your on the web, stop by the Z-Car Club of Washington web page: http://www.sos.net/~mswhite

Our hope is to meet other Z Car enthusiasts, make new friend's and have a great time, we would ask you all to pass the word around and give our Pacific North West Event a little push along.

Please advise by email at paulr@lsid.hp.com or by phone at 425.379.2002 if you will be attending so we can get an idea of numbers.

Here's a partial listing of available accommodations via:

Motels:

Aladdin Motor Inn 385-3747
Harborside Inn 385-7909
Point Hudson Resort & Marinas 385-2828
Port Townsend Inn Motel 385-2211
Tides Inn 385-0595

Bed & Breakfasts

Ann Starrett Mansion 385-3205
Annapurna Inn 385-2909
Baker House 385-6673
Bowen's Inn 379-1999
Chanticleer 385-6239
English Inn 385-5302
Hastings House/Old Consulate Inn 385-6753
Heritage House 385-6800
Holly Hill House 435-1454
James House 385-1238
Lincoln Inn 385-6677
Lizzie's 385-4168
Quimper Inn 385-1060
Ravenscroft 385-2784

Victorian

Belmont 385-3007
Bishop Victorian Guest Suites 385-6122
Manresa Castle 385-5750
Palace Hotel 385-0773
Swan Hotel 385-1718
Water Street Hotel 385-5467

-Z

the inboard faces of the outboard box sections.

The Upper Body Assembly

Until they are mated, neither the floor pan nor the Upper Body Assembly are, by themselves, very strong. Mating adds a third dimension (height) to the completed body, creating a very large box section surrounding the cockpit. The cockpit is, of course, a large hollow space, and the door openings put holes in the sides of the car, so any structure joining the roof to the floor pan must run around the perimeter of the cockpit area and around the doors. Load paths for both bending and torsional forces must therefore run up through the sides of the car.

Datsun provided the necessary strength in the sides of the body by using two vertical sheets of metal and welding them into partial box sections. Forward of the door, the two sheets—as tall as the firewall—tie into the firewall and the forward frame horns (more on those later). At the front edge of the door opening, the aft edges of the two sheets are capped and joined by a metal bulkhead that's often termed the "door post." At the doorpost, the outer of the two sheets is reinforced locally to carry the loads imposed by the door hinges. The tops of the two sheets are spot welded together and continue at their aft upper corner as a very small box section that runs up either side of the windshield and is known as the A-pillar.

Under each door opening, these same double wall sections carry through as the rocker panel box sections mentioned earlier. Aft of the door, the exterior sheet forms the outer fender while the interior sheet is spot welded to the inner fender well to which, in turn, the rear shock tower is spot welded. The inner metal layer continues up through the rear cabin "wings" as a decreasing-area box section tying into the roof and hatch hinge box section frames. At the rear edge of the door opening, the inner and outer metal layers are capped and joined by a vertical bulkhead similar to that of the forward door post area to which mounts the door latch catch. In the rear quarter window openings, the inner and outer sheets come together in two parallel half-inch flanges which are spot welded together.

A torsional load applied to one corner of the body (or a bending load applied to one end of the body) will be dispersed through the body sides, up through the A-pillars and the rear body wings, and into the roof and hatch frames. The roof sheet metal acts as a secondary shear web supporting the roof frame, but the primary load paths are directed through the A-pillar and body wing box sections. Dispersing the load into the entire body structure provides many times more load resistance than the front corner alone could provide.

At the front of the passenger compartment, at the top edge of the firewall, is a major reinforcement in the form of a full width transverse box of triangular cross section which also houses the windshield wiper assembly. The vertical leg of this triangular section is the topmost six inches of the firewall. The bottom leg (hypotenuse) of this triangular section is a steel stamping that is spot welded across the width of the firewall six inches below it's top edge. This piece runs upward and aft at about a 45 degree angle to terminate in the curved edge of the lower windshield frame. On the cockpit face of this bottom steel sheet are welded various tabs and brackets to support the dash panel, heater, and steering wheel column.

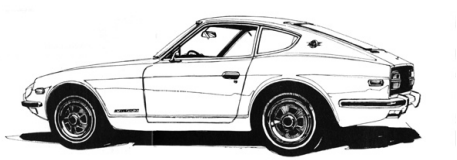
The third leg of the triangular box section (normally hidden under the cowl grillework) is a horizontal steel stamping running aft from the top edge of the firewall and terminating in the windshield frame. This top horizontal stamping is lightened considerably by several large holes which provide access to the wiper motor, and also act as air inlets for the heater/vent system which draws cabin ventilation air from the high pressure zone at the base of the windshield. Despite the large number of lightening holes present in the top horizontal leg of this triangular box section, the box adds a great deal of transverse, shoulder-high strength to the

front of the passenger compartment due to the curved shape of the windshield frame.

Moving aft of the door opening, a similar full width transverse triangular box section is found on the floor pan at the forward edges of the rear inner fenders, just aft of the seat location. This box is formed by 1) a transverse vertical bulkhead about ten inches tall that defines the front of the cargo area; 2) the forward horizontal floor of the cargo area; and 3) the floor pan sheet metal that curves up to provide suspension and differential clearance. Z owners know the two little nooks found inside this box section, and accessed by the little hatches in the forward cargo floor, as the jack storage location, but the box's primary duty is to stiffen the body between the forward portions of the inner wheel wells, and to provide vertical and lateral support for the forward rear suspension pivot points.

The rear shock towers are conical sheet metal pieces that are spot welded to the inner fender wells. To further stabilize the tops of the towers (which must resist lateral suspension loads) two u-shaped metal channels run from the edge of each tower top downward and inboard, connecting to the cargo floor several inches inboard from the bottoms of the shock towers. The resulting triangle resists lateral movement of the shock tower tops in normal use. The brace bottoms do not connect only to the cargo floor, but more importantly, to a part of the cargo floor that forms the top side of 2" by 3" transverse box section. This box supports the differential and rear, inboard suspension pivot points, and connects with two longitudinal box sections that mimic the purpose of the forward frame rail extensions, supporting the rear cargo deck.

Other than local steel reinforcements for bumper mounts (which steadily evolved in weight and complexity due to escalating federal crash protection regulations through the early '70's), the only significant feature remaining in the cargo deck is the spare tire recess which, together with the spare tire, forms a crush zone for passenger protection in rear end collisions.



Finally we turn to the body forward of the firewall. Whereas the need to provide space for occupants requires a large and hollow cockpit area aft of the firewall, the loads imposed on the front of the body forward of the firewall are few and concentrated. Load points include: 1) suspension attach points; 2) engine mounts; 3) radiator mounts; 4) bumper mounts; 5) rack and pinion mounts.

A cursory inspection of the engine bay clearly reveals most of the primary structural components. Two other major components—the forward frame horns—are visible only with the front fenders removed or by looking inside the fender wells. In order of decreasing importance, these components are the: 1) forward frame rails; 2) forward frame horns; 3) inner fender wells; 4) front crossmember; 5) shock towers; and 6) radiator mount bulkhead. We'll look at each in turn.

The forward frame rails run longitudinally along the bottom of the fender wells providing vertical, lateral, and torsional strength, as well as a mounting location for the front crossmember. Inside the engine bay the frame rails are dimensionally much deeper, and therefore, much stronger in the vertical plane than their extensions which run aft under the cockpit. Several major and minor components mount to the frame rails including (from the front toward the rear) the front bumpers, the radiator mount bulkhead, the front anti-roll bar, the front crossmember, and, near the firewall, the aft end of the suspension's tension/compression rod.

The forward frame horns provide torsional and bending strength along the left and right upper edges of the engine bay, lending strength to the shock towers and providing crash protection for head-on colli-

Fixing Your Shifter

A timeless bit of information from the Z-Car List from back in 1992

Have you noticed that your 4 or 5 speed manual transmission shift lever is getting loose, that the action is sloppy, that maybe it twists a bit as you shift? Is that what's bothering you, Vern? Well, here's how to fix it in the privacy of your own home.

This problem is caused by the fact that the bushing on which the shift lever pivots is some kind of composition material that tends to wear out or disintegrate. In my case ('75 280), the bushing was completely gone so I really don't have any idea what it was made of.

To get to this bushing, first remove the center console after unscrewing the shift knob. Underneath is a rubber boot that seals the shifter from the outside. Remove the 4 screws that hold it on and get it out of the way. You will see the snout of the transmission. There should be another small boot that seals the entrance of the shift lever into the transmission. Pull this boot upward and off. You will see a clevis-pin arrangement. The shift lever is held in place by a pin that inserts through a stamped clevis assembly and is held in place by a "C" ring. Remove this ring and the pin. The shift lever then just pulls up and out. There should be a cylindrical plastic bushing on the end of the shifter. It should be free to pivot but not sloppy.

Examine the hole where clevis pin came out. There should be a bushing of some sorts there. If there is only the shift rod, then the bushing has broken up and disappeared. If any residue is in the hole, punch it out with a punch and hammer.

We'll now make a new bushing out of brass. At this point, a lathe is handy but a drill press or electric drill and some files will do. The raw material of choice is porous, oil impregnated bronze but since we're doing this at home, brass will have to do. I started with a brass double ended 3/8" male pipe coupling.

The procedure is simple. Chuck one end of this coupling in your drill press or electric drill clamped in a vice. Select a medium grade file and, pushing it against the rotation of the drill, slowly square off the fitting and reduce its diameter until it is about 0.010 larger than the hole in the shift rod. Then select a fine tooth file and take an additional 0.005 off so that you have about 0.005 interference fit. If you don't have calipers or a mike, this fit is about when the part will almost start into the hole in the shifter but needes considerable force to actually go. Machine the part all the way up to and including the wrench flats on the coupling. When you finish, you should have a piece with threads on one end, a shoulder, followed by a finely finished cylinder on the other.

The part is pressed into the shifter rod all the way up to the shoulder. If you don't have a press, a vice and a socket will do fine. Invert the socket so the bolt end is out, place the shifter rod on top of the socket and start the new bushing from the other side. Squeeze the whole assembly in the vice until it snugs into place.

Next, take a hack saw and cut the bushing off flush with the sides of the shift rod. Take a fine file and smooth the surfaces until the bushing is absolutely flat with the rod. Polish with emory cloth.

Next, the center hole must be bored to the correct diameter to accept the clevis pin. A 23/64" drill happens to be exactly the right size for this operation. You must work up to this size in several steps. If you try to go all at once, the soft brass will grab the bit and likely destroy the bushing if not the bit. Drill slowly and carefully, trying not to heat the part. I use 1,1,1 tricloroethane as a cutting fluid. Liquid dishwashing detergent also works well. Deburr the hole with a pocket knife and the job is done.

Reassemble the shifter mechanism and enjoy. You will find that the shifting action gains a precision you've probably never experienced in a Z before. It's absolutely great to be able to feel the gears engage on each shift. Plus there is no more buzzing in the lever at high RPM.

-Z

Quick Bits

Fox Paws

I don't know whether I was off my feed last month or if I just got a bad batch of Penn Cove mussels, but the last newZletter issue contained a number of puzzling, if not downright mysterious linguistic faux pas. Sorry. Hope they didn't keep you up at night. Fortunately my errors were of the "Tom shot the wildly bog" type, and I don't think I crippled anything factual that would make your Z run rough. Keep your fingers crossed for this issue.

Injector Pulse Width

Scott Bruning posts the following two bits of information to the Z-Car mailing list for your interest.

The computer measures battery voltage, and sets the pulse width of the injectors accordinly. The colder it is outside, the lower the voltage, and the higher the amperage across the injector. If you have a weak battery, dirty terminals, or a dead alternator, you can actually fail smog because the electrical system is not seeing enough voltage!

Fuel Pump Not Working?

Another tip: If your fuel pump is not working, it may not be the fuel pump! The 7 pin flowmeter has electrical contacts inside it for the pump. It is tied to the thermal time switch, cold start injector, ect,ect,ect. Check out my site for a free schematic of the master Fi relay! I learned a lot shooting the Fi Video.

NGK Info

What follows is from a post made to the Z-Car List by Adam Hume from Stillen

Hello list!! Been a while since I spent some time with the IZCC. So I'm back on the list for now. I've been really busy here - I'll try to help when I can!!

Below is a post I sent in the past that breaks down the #'s for the spark plugs. I hope this helps Henri. Maybe the "C" tip design is still in use in Europe??? I do know that the part number you mentioned is listed as a plug for the ZXTT. As I mention below - I'm pretty sure that the "C" tip is a wider tip design. You may want to contact NGK directly to get more info. (sorry I don't have the phone # here - call or fax me if you need it)

Cheers everyone
Adam Hume
Steve Millen Sportcars

****

Here's the skinny for NGK plugs: Let's break down the numbers!!

PFR6B-11(B)

P - The P means that it's a platinum plug

F - This is the Metal Shell Size - F = 19mm reach, 16mm hex

R - Resistor

6 - Heat range - this would indicate a heat range 6 plug (the colder one) - 5 would be the hot plug (Stock)

B - Special design construction code

11 - Gap width - 11= 1.1mm or .044"

(B) - it appears this idicates the the tip design - i.e. width

The "C" tip design is probably not in use - at least not with the VG30DETT - As I remember when I worked for Nissan this part number supersedes back to the "B" tip.

sions. They project forward from the upper outboard corners of the firewall all the way to the radiator bulkhead as curved box sections of decreasing cross section. Forward of the radiator bulkhead, the frame horns have blended into thin, double walled extensions of the inner fender wells, and act as mounts for the hood hinges. The interiors of the frame horns are also used as secondary air inlets, directing high pressure air from the area in front of the radiator to the individual air vents located near the occupants' knees.

The curved, inner fender wells connect the frame rails to the forward frame horns and provide a large area of support for the conical shock towers which run vertically and are spot welded to the inner wells. The wells extend forward from the firewall to stabilize the radiator mount bulkhead. As a single, curved sheet of metal they provide significant strength only as a connection between the frame horns and the frame rails, though they do add some crumple resistance in a head-on crash scenario.

The front cross member is a transverse steel channel that bolts to the frame rails on either side and directly supports the engine mounts and the rack and pinion mount. As engine and steering loads are significant and concentrated, this channel is thick walled and heavy.

The radiator bulkhead is attached near to the extreme forward ends of the frame horns, the inner fender wells, and the frame rails. This bulkhead not only supports the radiator but connects the left and right sides of the body and provides torsional strength to the engine bay.

Now that you've managed to wade through all the description, here are some observations on how the various parts work, or don't work, together.

Evolution of design

The early 240Z body was found to have at least one major weak point. Torsional forces acting on the body began causing a failure in a sheet metal joint in the box section between the rear hatch opening and the rear window. Reinforcement of this area was introduced in 1972.

Frame rail extensions on the 240Z and early 260Z (until August '74) extended aft under the cockpit to a point about 18" forward of where the body pan curves up for rear suspension clearance. After August of 1974, these frame rail channels were extended further aft to where the body curves upward and were made slightly deeper in cross section for greater strength. The longer frame rails also provided additional support for the rear roll bar attach point which became standard in 1974. As a matter of interest, only two bodies were made for the early Z's. The 240 and early 260 used the 240 body, while 260's built after August '74 used the 280 body.

Normal Operation Loads

The 240 body and components were designed to withstand moderate suspension loading, and occupant, fuel, and cargo loads as defined by the owner's manual, body placards, and the fuel tank capacity. While normal passenger and cargo loads were seldom exceeded, the 240's suspension and torsional strength limits were more frequently reached by aggressive driving styles. In practice, however, the post '71 Z body has been found to

be deficient only when saddled with aftermarket suspension parts and full racing suspension loads.

Racing Loads

Full race driving styles, and installation of heavier springs, anti-sway bars, and racing tires will exceed the strength of some early Z body's components, as well as its overall torsional strength. Body racing modifications, therefore, always seek to reinforce these areas or parts. Modifications generally fall into two categories—component upgrades, and body stiffeners or reinforcements—and I'll comment here only on the latter category.

Body deficiencies can be classed as load point deficiencies, shock tower movement, or general torsional weakness. Load point deficiencies include the front sway bar mount and the steering rack mount.

The deficiency of the front sway bar mount is that the frame rail bracket bolts only screw into the bottom sheet of metal in the frame rail box section. This bottom metal sheet is attached to the other three sides of the box only by spot welds and repeated heavy loads on the bracket will break the welds, fatigue the metal locally, and greatly reduce the effectiveness of the sway bar due to bar movement. The modification to counter this deficiency requires that the sway bar mounting bolt extend entirely through the frame rail to access the strength of the top face of the box section, and to better disperse the load into the entirety of the box section. Furthermore it is prudent to also weld a bushing inside box to take the compression loads imposed by tightening the bolt, and to prevent collapse of the box section.

The steering rack mount deficiency, resulting in lateral rack movement, is primarily one of overly soft rubber bushings and can usually be solved by installation of urethane or other high performance bushings. However the rack mounts proper—the two steel channels welded to the forward face of the front crossmember—should be regularly monitored for weld cracking, and preferably should be reinforced to resist lateral loads.

Lateral shock tower movement results from heavy cornering forces, affects suspension settings, and disrupts consistent handling. This problem is countered by bracing the tower tops, the simplest form of which are strut braces which connect the tops of the left and right towers together (both front and rear), allowing the unloaded tower top to support the loaded tower top. A more complex bracing version for the rear towers would be a transverse welded X-brace, connecting each tower top to the cargo floor box section near the bottom of the other tower.

Forward of the firewall, modifications to resist lateral movement of the front shock towers are often combined with modifications to increase the torsional rigidity of the body, particularly in high horsepower or V8 Z's. In addition to a transverse strut brace (to prevent lateral tower movement), additional bracing may also run aft, angling inboard from the tower tops to a rollcage kneebar, or to the firewall at one of the inboard locations where the firewall is supported by longitudinal bulkheads inside the transverse triangular box section. Additional bracing may also extend forward from the tower tops to connect to the lower and/or upper horizontal boxes of the radiator bulkhead at the car centerline. The radiator bulkhead may be further reinforced by installing diagonal braces from corner to corner.

Current V8 conversions suggest the addition of two longitudinal aluminum or steel channels supporting the forward frame rails in the engine bay, and extending under and bolting to the cockpit body, similar to the stock frame rail extensions.

Abnormal Operation Loads

Abnormal operations are, unfortunately, a statistical reality. Abnormal loads include loads resulting from front, quarter, side, and rear collisions, as well as rollovers. A review of the role of body structure in each is useful.

Dear Son: Please Write

If you've received more than a few ZCCW NewZletters, you know by now that we're eager to publish anything that Z fanatics might be interested in. With all the blather I've written over the past couple of years, it has seemed increasingly odd that no one has ever written a letter to the editor correcting me, making a suggestion, or telling me to go to hell. This is not right. Editors are made to be scoffed at and complained about. It's their place in life.

This oddity can be corrected by a few choice letters from you ZCCW'ers that expound, insinuate, threaten, heckle, deride, or even request more information on this or that. That'll give me something to go on so that our NewZletter can become as famous and well read as, say, Car and Driver, or that other car rag that regularly talks about lateral acceleration (that's when you hit a patch of ice while oversteering, to you uninitiated).

To make this process even easier, even mindless, I've included below the questions I ask ZCCW members to create a ZCCW Member Profile. Member Profiles give other ZCCW'ers a chance to comprehend the greater You, and ammunition to hold against you in public at some future time. You can answer any of the questions that you choose at your leisure and ship them off to me via either the pony express or e-mail, and I promise to make you famous internationally in an upcoming ZCCW newsletter edition. If you really don't want to talk about yourself, hand this list to your mate or significant other and let them have a go. We'll all appreciate it.

ZCCW NewZletter
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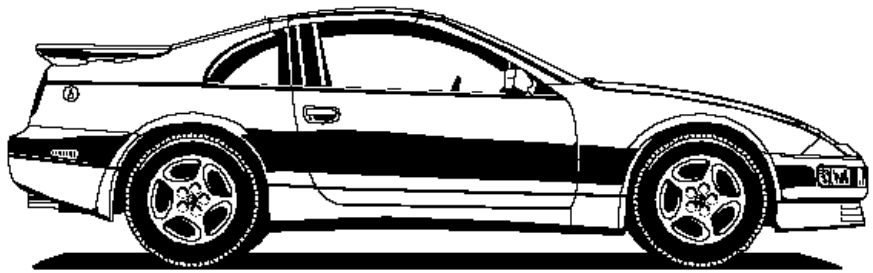
Langley, WA 98260
Email: jameslux@whidbey.com

ZCCW Member Profile

What is your name?
Age (yours, not your Z's)
What kind of Z?
Is this your first Z?
How long have you owned it?
What other cars do you currently own?
How do you use your Z?
How many miles per year do you drive your Z?
How many total miles have you driven in your lifetime?
How many cars have you owned in your lifetime?
Is you Z stock?
If not, what modifications has it undergone?
Have you autocrossed?
If so, what have you learned?
What do you think you have to learn next?
Have you engaged in rallies?
What long trips have you taken in your Z?
Any unique current or past problems?
Any horror stories?
Any humerous stories?
Any dating/wife stories?
Any accidents?
What was your weirdest situation in your Z?
What is the top speed you've ever been in in a car?
Ever been upside down? (nonono... in a car; airplanes not included)



1994 Nissan 300 ZX® Turbo 2-Seater

heavily corroded in this area may suffer from a loss of strength exceeding 75%.

Number two is the mirror location around and under the brake master cylinder. While the problem here is not usually as bad as on the battery side, it can be significant, and combined with corrosion on the other side, you can throw away any idea of upgrading your suspension: the body doesn't have the strength or rigidity to let the suspension properly do its job.

Number three on the bad guy list are the rocker panels. If you have visible rust in your rockers, the strength of the box section has been significantly compromised. Again, remember what this section does: it transmits the loads originating in the suspension and engine up into the roof to take advantage of the entire body structure. If the rockers are rusted, the load path is interrupted, the body is weaker, and you are on the road to localized metal fatigue because a small area must now do major work by itself. Oh, yes: the other thing the rockers do is protect the occupants. Don't want to forget that.

Last on this quick list are the aft frame rail extensions and cargo area box sections, the ones under the cockpit and rear deck that you never see, and in which Datsun drilled holes so the water could get in. These extensions are spot welded to the floor pan, so corrosion has only to degrade the small spot welds in order to cut the strength of the entire rail. And what do they do? They keep the passengers off the ground (remember the two 300 pounders?), transmit engine loads into the body structure, support whatever you toss into the cargo area, and act as mounting points for the rear suspension and differential.

You get the picture. Hidden corrosion affects handling, body integrity, and crash protection, not to mention abnormal loads. You might want to refer back to the corrosion treatment articles run in previous NewZletters at this point.

Conclusion

The early Datsun Z derived some of its performance from its light weight and structural details of the unit-body design were very important to its strength. Examination of the location and size of box sections of a structure will show exactly where and what relative loads the designer envisioned would exist in the working structure. Loads imposed by racing, or by heavy duty, aftermarket suspension components stress body rigidity much more than stock usage and components. Any load path that is interrupted concentrates loads in that area, decreasing overall body strength and increasing metal fatigue. Corrosion decreases strength and can have significant, negative effects on unit-body vehicles.

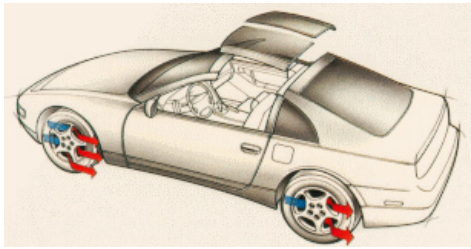
I guarantee the next time you examine your Z, you'll be looking at it with a different perspective.

-Z

Body structure resisting a head-on collision concentrates on all structures ahead of the passengers: frame horns, frame rails, inner fender wells, radiator bulkhead, engine, hood, firewall, transmission tunnel, and forward triangular box section at the top of the firewall. Of these components, the greatest strength will be found in the frame horns, frame rails, and inner fender wells, having a total mass of perhaps thirty pounds. This small amount is augmented slightly by the short outboard dogleg Datsun designed into the frame horns near the firewall, which would assist an orderly crushing of the horn. But it is an alarmingly small mass when compared to that of a full sized American sedan, or worse, a laden garbage truck.

If contact is made directly head-on, all the structures mentioned above will come into play, but the chances are much greater that a two car collision would occur off center, on a quartering vector. Concentrating the same amount of load on one side of the body or the other reduces the amount of structure which must intercept the load, and often reduces the amount of distance the body has to decelerate the load. On the other hand, a quartering impact will benefit from the frame horn dogleg, as well as the better impact angle on the triangular transverse box, both of which would slightly improve passenger compartment intrusion.

Side collisions in the early Z are not much fun. Doors are thin, effective door beams were not employed, and the outer box beams are oriented in the wrong direction for strength and are too low to afford much protection. What more can be said? If you want lots of protection in an early Z, install a full roll cage.



Rear collisions, despite the short distance between bumper and occupant, are blessed with some effective crush zones. If the passenger compartment does not suffer intrusion in a collision, the leading cause of major injury might well be back injuries resulting from failure of seat reclining mechanisms.

We need to not ignore upside-down excursions in abnormal operations. While the Z body probably possesses the strength to rest on its top without collapse, the chances are that one or more of the few structures that could keep you off your head—the A pillars or rear wings—will suffer lateral damage, and will therefore not be up to full strength (which in the case of the A pillars, isn't that much to begin with). The conclusion on roll-overs could be the same as a breakfast order: over lightly, please.

Body Degeneration

Time changes all things and early Z's faster than many others. Datsun's anti-corrosion program was still in the planning stages, and the Z's sheet metal was thin. So most everything written above now needs to be modified slightly. Early Z's suffer from major corrosion everywhere, but statistically, several areas suffer more corrosion than others. Ordering these corrosion sites in decreasing awfulness, we find: 1) the area around the battery; 2) the area around the brake master cylinder; 3) rocker panels; 4) aft frame rail extensions and cargo area box sections.

The undisputed leader of this sorry bunch has to be the fender well and firewall adjacent to the battery, and the frame rail directly under the battery. Corrosion in this area is so bad in some Z's that the frame rail is nearly severed and the firewall and fender well have significant voids. Now is the time to think about what these pieces of sheet metal do: they hold the occupants and engine off the ground, resist torsional loads originating in the suspension and engine, and protect the occupants in collisions. A Z

ZCCW Automotive Activities

August

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

September

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

October

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August 2-3
West Coast Z Event, Nissan Headquarters, Gardena, CA, by Group Z.

August 3
B.C. Z-Car Registry Annual Whistler Run

August 7
BSCC Time Trial - Bremerton

August 16-17
ZCCW/BCZCR 3rd Annual Port Townsend Meeting of the MindZ. Also, Port Townsend Kiwanis Classic Car Show.

August 23-24
3rd Annual Hot August Swap Meet & Car Show - Bates Technical College, Tacoma. Opens 8am, Adm $1.

August 24
WWSCC BEAC Enduro XXVIII - Kent

August 31
NWR/SCCA Regional #6 - Kent

September 1
BSCC Event #6 - Bremerton

September 20
5th Annual Woodstock Festival - Duval, WA

September 20-21
Harvest Swap Meet, Chehalis, WA

September 27
ZCCW General Meeting - Location TBD

September 27
BSCC School - Bremerton
NWR/SCCA Solo II School - Kent

September 28
BSCC Event #7 - Bremerton
NWR/SCCA REtional #7 - Kent
Snohomish Car Show - Snohomish

October 4
Road trip to Leavenworth

October 5
Rally "4" Kids, King County, WA.

October 11
Crazy Days Car Show. Arlington/ Lakewood

October 11-12
29th Annual Monroe Swap Meet, Evergreen Fairgrounds.

October 25
ZCCW General Meeting - Location TBD

—— ...What's Coming Up ——

November 1-2
Swap Meet, Kitsap Fairgrounds, Bremerton

November 1
Antique Toy Show, Puyallup, WA Fairgrounds

November 9
Elite's Project Santa Claus, Bellingham

November 22(?)
ZCCW General Meeting - Location TBD

– 1998 –

February 28
Nissan Datsun Sports Owners Club, Inc. 30th Anniversary black tie event. South Yarra VIC Australia

July 20-25
11th Annual Z-Car Convention

The ZCCW draws its calendar information from many sources. If you would like to be one of those sources and .have automotive events that you would like to have included, email Michael at mswhite@sos.net