**ASSEMBLY MANUAL FOR DUTTON SURF (Jimny based)**

**This manual – Oct 2019 - takes precedent over all earlier dated editions**


## TOOLS REQUIRED

Usual garage tools - hand tools, jack, axle stands, drill, files, measuring tape, mastic dispenser, WD40 anti fling chain wax, 3/16” lazy tong hand Pop rivet gun

We recommend using “proper” wire strippers and crimpers (these are approx £15 each):-

If there is anything that does not make sense please advise, we are always interested in any comments that might improve the build-up for the benefit of other builders

It is recommended that you fill in the following and keep this manual with the completed Surf; it will help with obtaining parts at a later date

DUTTON SURF VIN:- DUTT0N4X4SURF0_ _ _
SUZUKI JIMNY VIN (17 digit):- JSAFJB43V00_ _ _ _ _ _
SUZUKI REGISTRATION #: -
SUZUKI REGISTRATION YEAR: -

NOTE you cannot use the letters I, Q or O on any VIN so on the Dutton VIN the letter O in Dutton is replaced with a zero = 0

NOTE if you are going to register the Surf using the Jimny donor you MUST have the Jimny V5C, use V62 form from DVLA web site if you need a replacement

ITEMS THAT ARE SUPPLIED LOOSE (i.e. not pre-attached to the hull/deck) ARE HIGHLIGHTED IN GREEN

Nomenclature: -

LHS = Left as viewed from sitting in car
RHS = Right as viewed from sitting in car

LHD = Left hand drive
RHD = Right hand drive
PS = passenger side
DS = drivers side
Wet side is any part of car that is contactable with water
Dry side is any part of car that does not come into contact with water
ss = stainless steel
Brk = bracket
Dia = diameter
# = Suzuki part number
i/d = inside diameter
o/d = outside diameter
IVA = Individual Vehicle Approval
ffm = full and free movement
GRP = Glassfibre reinforced plastic (FRP in some countries)
F = front
R = rear
m = male
f = female
Nylock = self locking nut
SVA = Single Vehicle Approval (now obsolete)
Plain washer = normal outside dia (2 x i/d)
Penny washer = oversize outside dia (3.5 x i/d)
MS = mild steel
1" (inch) = 25.4mm
cyl = cylinder
hex set = hexagonal headed fully threaded bolt
damper = what people incorrectly call a "shock absorber"
WD = WD40 anti fling motorbike chain wax (or equivalent)
VIN = Vehicle Identification Number
CB = circuit breaker
Dowty washer = bonded seal

## READ THIS BEFORE BUILD-UP

To comply with IVA all pipes/hoses/wire/cables etc. must be supported minimum every 12" (300mm)

All cam locks (bonnet/sundeck/targa) are super glued to GRP, if removed they must be re-glued to avoid rotating - do not over tighten

All Non ss parts (axles/suspension etc) fitted to wet side must be properly cleaned, all loose rust removed and painted with zinc phosphate, marine undercoat and black marine top coat (Apart from braking surfaces and where for example the brake disc or prop-shaft etc mates to the axle)

When applying **mastic,** degrease all surfaces and surround bolt holes with a bead of approx ¼" (5mm) dia

A full list of nuts & bolts/hose clips/wire etc is supplied with the kit

All bare steel components inside the car need painting (pedal box etc)

EVERY HOLE THRU THE HULL MUST BE SEALED WITH MASTIC

NEVER USE A SELF TAPPING SCREW UNDER THE WATER LINE THAT BREAKS THRU THE HULL (it could eventually fall out) SIMILARLY ALL NUTS/BOLTS ON THE HULL THAT ARE UNDER THE WATER LINE MUST BE SELF LOCKING

## THE JIMNY STRIP DOWN

Remove parts in order best suited to you bearing in mind your available space and who is there to help you. We suggest you take photos/sketch any items that you might forget how to re-assemble. Always remove items with as many parts attached as it saves time with the build-up.

A few important points:-

1/ before disconnecting battery:-
a) wipers in park position
b) electric windows in up position
c) With engine running set transfer box in 4H or 4L to lock front hubs (if this is not possible we will advise later how to manually lock front hubs)
2/ road wheels straight and remove steer wheel and black steer wiring ring (air bag/horn called a “squid”) tape up ring and on NO ACCOUNT let it rotate
3/ unless you have hydraulic pullers you will find it impossible to remove the arm from steer box, in which case give us whole unit and we will remove it for you (do NOT heat or hit to remove)

4/These are common parts that customers forget to remove:-

a) 4 round rubber seats from road coil spring tops
b) 2 rear axle re-bound rubbers
c) Side door body top U section edging
d) Exhaust mount rubbers (2 required)
e) 2 Inner grab handles
f) rear door rubber

5/ Rip off the front re-bound rubbers from the chassis, it does not matter that the retaining tongue will tear off

## THE BUILD-UP

REMOVE THE FOLLOWING FROM YOUR SURF: -

DOORS remove from hinge and note any spacers fitted

BONNET – leave hinge on deck

REAR POUPE DECK OR SUN DECK

TRANSFER BOX COVER - NEVER STAND ON THE JET DRIVE SHAFT

## TRANSFER BOX

This is always factory fitted and requires no further work. SUPPLIED DRY so fill with API GL-4 75W-90 oil

TICK when filled……

## STEERING BOX

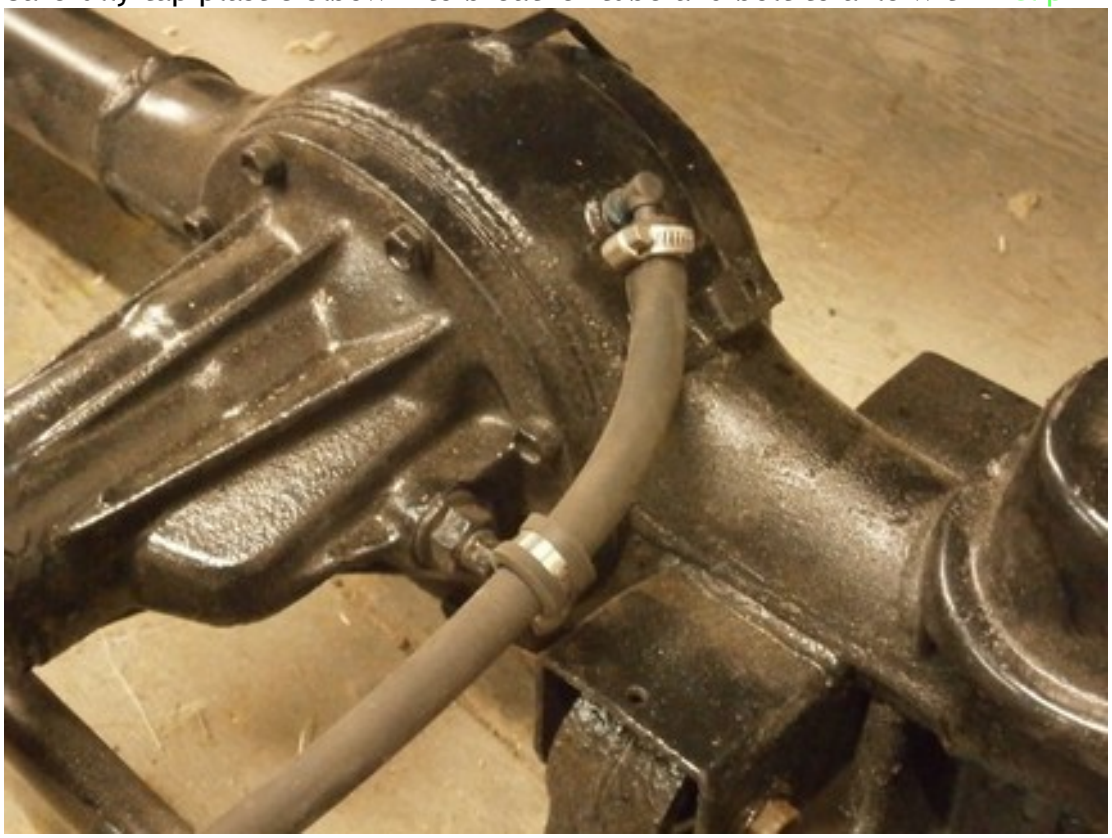
Factory fitted

## FRONT AXLE

THIS MUST BE FULLY CLEANED AND PAINTED AS DESCRIBED ON 2nd PAGE

Remove axle vent cap and spring and grind down to 1/8”, mastic short end of 90 deg plastic elbow  make sure the hole is not blocked,  facing outwards towards RHS

Carefully tap plastic elbow into breather tube and bolt to axle with P clip



Remove both steel vacuum pipes and all rubber hoses, cut rubber hose to 7” and join both brass inserts in  hub (upper hose in pic - lower hose is ABS)

Check that both front hubs are locked by holding them and attempting to rotate diff flange, if flange rotates hubs are not locked

To lock hubs remove both and set with centre gear proud, do not accidentally push back into 2WD position when re-fitting

split brake callipers and clean/grease the slide bolt assemblies

Fit 29” breather hose (8mm i/d)

Un-locked hub with centre gear in 2WD position (held in position with magnet built into hub)

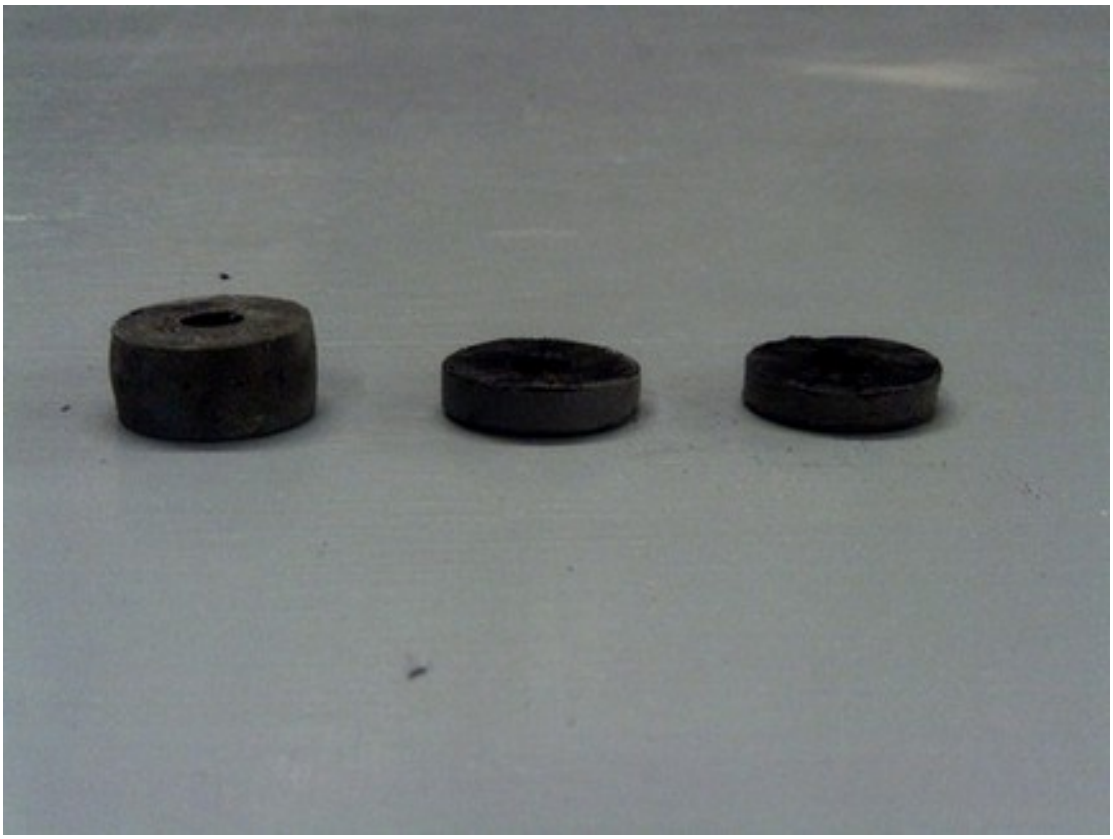
Locked hub with centre gear standing proud  (held in position with spring built into hub)

The axle spherical ends (challis) must be smooth, if they are rusty they WILL leak so remove the hub and remove all rust and re-paint, if required replace seals
Spherical axle ends (challis) must always be kept covered in copious amounts of grease

Check axle EP80W-90 GL – 5 mineral oil level, TICK when filled…….

Fully assemble front axle as above

Bolt up axle to ss brk on hull using original Suzuki nut and bolt and grease.



Front damper rubber insulators are cut down by factory for use on all 4 dampers

shows assembly sequence of all 4 damper tops

Fit rubber insulator to top of coil spring. The coil springs must not rest on the GRP hull. Front springs long, rear springs short

Bolt up front dampers, use lipped ss washers in following sequence: - Lipped ss washer – half width rubber insulator – fit thru hull – half width rubber block – lipped ss washer – self-locking nut or lock nut. Do not over tighten – just enough so damper is not loose or allows water to drip thru mounting

Bolt up panhard rod using Suzuki bolts and grease

Bolt flexi brake hose facing forward

Bolt up 2 yellow front flexi brake hose, to hull use mastic. Attach using ss ½ nut

Fit ABS loom thru 22mm hole on wheel arch

Fit 29” breather hose (8mm i/d) thru 22mm hole near top RHS damper mount leave 3” protruding inside hull

Fit P clip 30mm to outside of wheel arch, check ffm, this holds breather hose and ABS add a couple of cable ties between P clip and axle. Apply mastic to seal where these hoses go thru the wheel arch

Fit front wheels, the threads must be covered in grease before fittings. If fitting locking wheel nuts DO NOT use key type - they will corrode. Check ffm and that nothing is likely to rub on the wheel/tyre

Type pressure front and rear 25 psi

STEERING BOX ARM

Arm factory fitted

REAR AXLE

THIS MUST BE FULLY CLEANED AND PAINTED AS DESCRIBED ON 2nd PAGE

Remove axle vent cap, grind down tube to 1/8”, mastic short end of 90 deg plastic elbow  make sure the hole is not blocked, facing outwards towards LHS

Disguard short solid brake pipe, grind off the brake pipe retaining brk on axle

Fit rubber insulator to top of coil spring. The coil spring must not rest on the GRP hull.  Front axle springs long, rear axle springs short, if rear springs are different length fit longer spring on drivers side

See damper mounting arrangement on front axle photos

ABS wiring:- white socket  RHS, blue socket  LHS

Fit 52” solid brake pipe to axle and clamp to axle

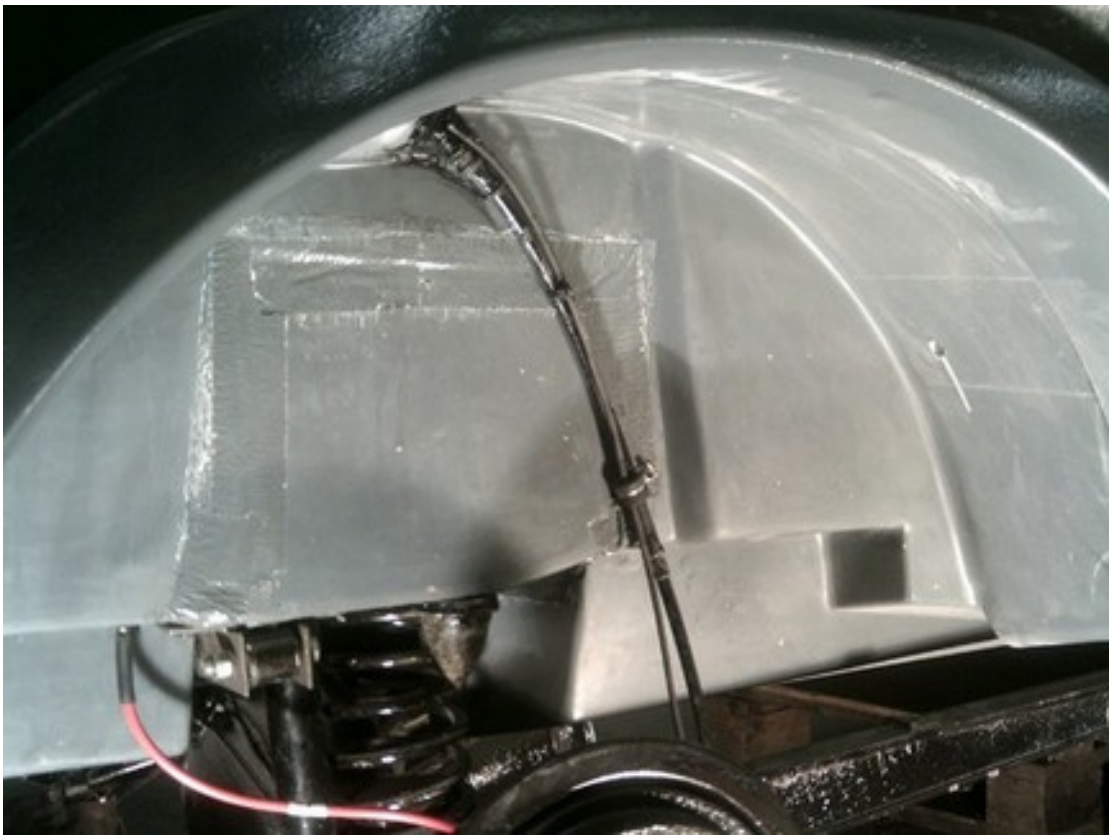
Fit 56” breather hose (8mm i/d) to  90 deg plastic elbow

Fully assemble rear axle as above

Bolt up rear dampers, use lipped ss washers in following sequence: - Lipped ss washer – half width rubber insulator – fit thru hull – half width rubber block – lipped ss washer – self-locking nut or lock nut. Do not over tighten – just enough so damper is not loose or allows water to drip thru mounting

Bolt up panhard rod using Suzuki bolts and grease

Bolt up rear yellow flexi brake hose, solid end to hull use mastic. Attach using ss ½ nut



Fit 56” breather hose (8mm i/d) to 90 deg plastic elbow with 20mm ss hose clip, cable tie breather along and under solid brake pipe to back plate then up thru 25mm hole near top LHS wheel arch with 3” protruding into hull

Fit hand brake cables thru hull to 2 holes in top of wheel arch

P clip 16mm ss hose clip handbrake cable/ABS to RHS wheel arch
P clip 25mm ss hose clip handbrake cable/ABS /breather to LHS wheel arch

Bolt rear yellow flexi brake hose to lower tapping on wheel cylinder

Check axle EP80W-90 GL – 5 mineral oil level, TICK when filled…….

Strip down rear brake cylinders, if required carefully clean pistons and bore using 1200 wet or dry paper – clean and re-assemble, peel back rubber gaiters and pack with grease check that grease will not leak out onto the shoes

Mastic and bolt rebound rubbers thru hull, fill up internal nut recess with mastic

Type pressure front and rear 28 psi

Fit rear wheels, the threads must be covered in grease before fittings. If fitting locking wheel nuts DO NOT use key type - they will corrode. Check ffm and that nothing is likely to rub on the wheel/tyre

### FRONT AXLE PROP SHAFT

Check that prop can close to at least ½” (12mm) shorter than distance between flanges to allow clearance when axles move, grease faces of flanges before fitting

Check condition of front spline rubber gaiter Suzuki # 27153-83001-000 and replace if damaged.

Grease rubber boot and seal with cable ties at both ends to make watertight. Slide prop into splined part of prop that is factory fitted to transfer box and attach to F diff. Check knuckles ARE IN PHASE.

### REAR AXLE PROP SHAFT

Check that prop can close to at least ½” (12mm) shorter than distance between flanges to allow clearance when axles move, grease faces of flanges before fitting

Bolt rear prop with splined end to transfer box

# MILESTONE # 1 that completes the major outside work

### WIPER

Bolt up wiper motor using Suzuki fasteners and 6 ss penny washers.

Knock out retaining  bolts, grind down white plastic wheelbox to clear deck moulding. Note outer arm is lengthened ¼” at factory

Bolt up both wheelbox 4 off M5 x 20 + 4 off nylock + 4 washer and attach link from motor to centre wheel box, temporally wire up motor – both lower terminals on connector block run motor, check ffm. The centre wheel box must swing thru an equal arc either side of central, if it does not then adjust the link to suit. ONLY after this link is adjusted correctly add outer wheelbox link and adjust so it swings thru an equal arc either side of central.  Wiper motor must be earthed

Mastic around wheelbox and bolt to deck 4 off M5 X 25 c’sunk bolts

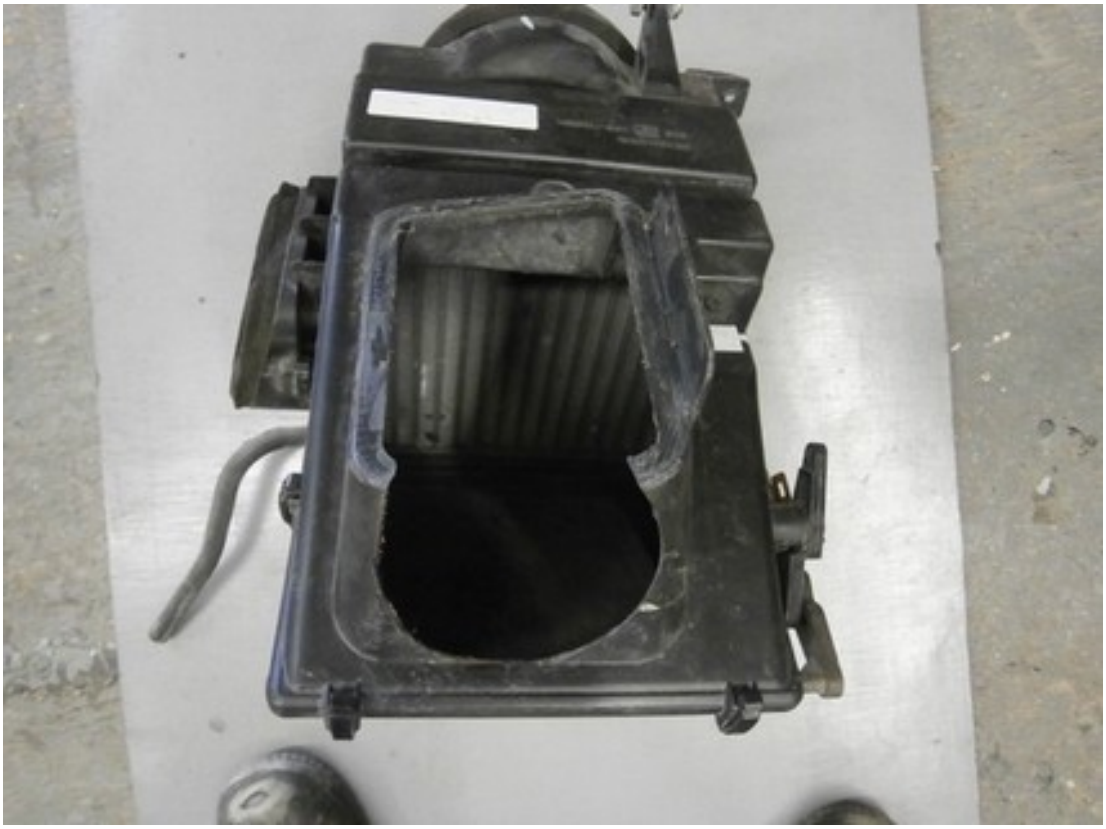
Push screen washer jet thru pre-drilled 10mm hole, attach washer hose, mastic washer hose to top of heater, washer hose exits to LHS

## HEATER & SPEAKERS

Mastic rubber bulkhead water hose gaiter into pre-cut slot in gearbox tunnel, remove protective tape from double sided foam on top of GRP gearbox tunnel, fit heater thru rubber gaiter, drill and bolt up 2 off M8 x 20 + 2 off M8 nylock + 4 off penny washer.

This is RHD heater, LHD is the same except control flaps on other side. Fit Suzuki water pipe grommet. Remove protective paper cover over double sided tape and fit heat unit

also shows 4” dia pre cut hole for speakers

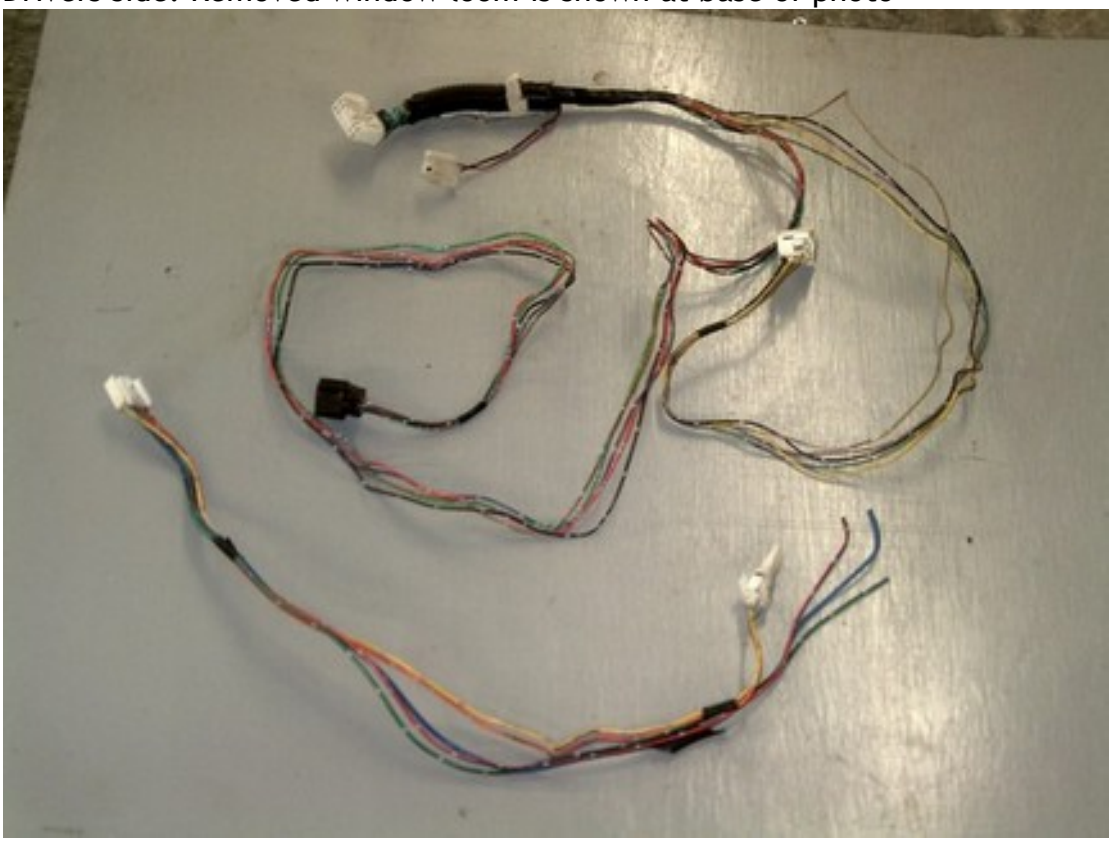


cut out recirc intake as shown

rivet GRP duct to recirc box, fit recirc box to heater body attach 4” dia duct using cable ties

## DOOR LOOM

Cut off rubber gaiter and all retaining clips. Cut off window loom and disguard
Passenger side. Removed window loom is shown at base of photo
Drivers side. Removed window loom is shown at base of photo



## ENGINE

LHS engine brk is factory fitted to hull, remove top ss rad crossbar in engine bay

If mileage is high (50,000 + miles) split engine and gearbox to check clutch and release bearing for wear, re-assemble. Drain out oil, refit sump drain plug and grind off the hexagonal part of plug, be careful not to generate too much heat if washer is fabric

Remove viscous fan and bin, re-fit nuts, cut 4 studs flush

De-grease engine and gearbox, mask electrical connections, inlet etc, remove oil filler cap plastic engine top and dip stick and spray to protect

Fit engine/gearbox as one unit. Grind off locating stud off both rubber insulators, steel shield fits on engine side of insulators, lower unit into hull and locate  LHS engine mounting into brk fitted onto hull, bolt up.
Mastic and bolt up Suzuki RHS engine mount use 2 off M8 x 25, 2 off M8 nylock,  2 off penny, use penny washers on underside

Bolt up gearbox mount. Bolt up engine prop shaft, check ffm.

Fit oil sandwich plate so that both outlet fittings are facing down, fit new oil filter

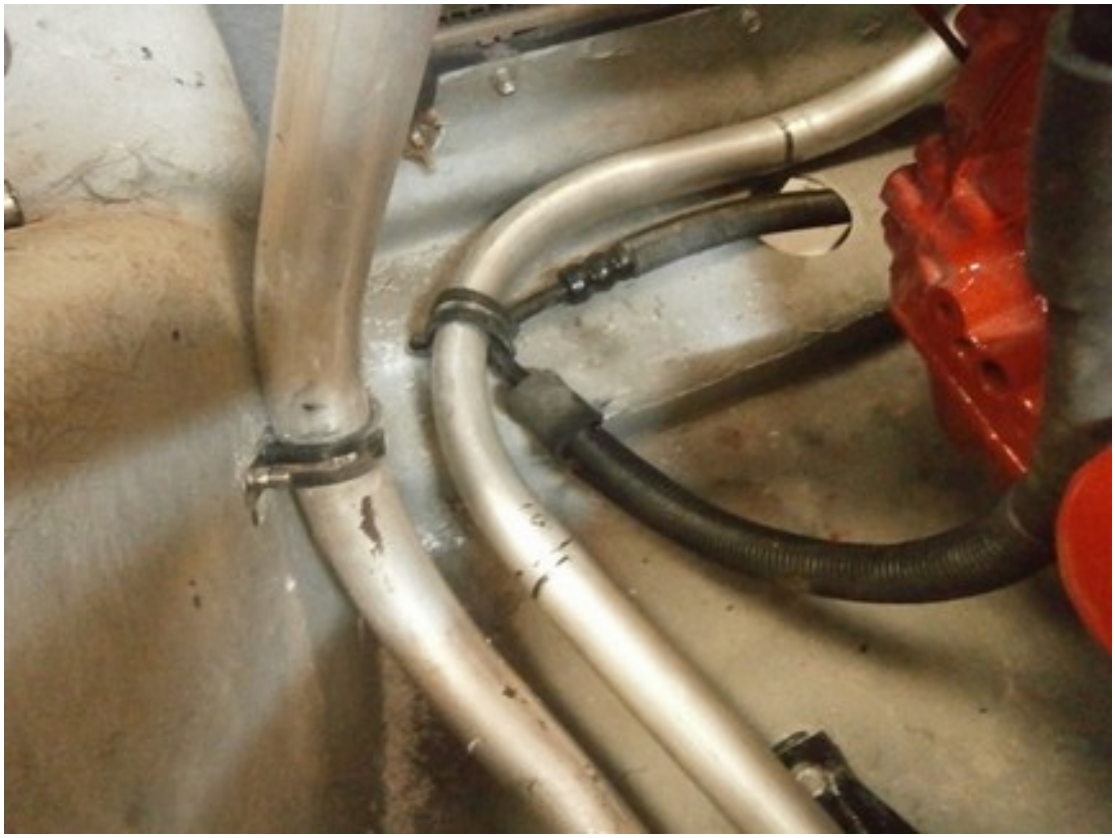
FRONT ENGINE TOP HOSE CASTING

Refit as shown

ALUMINIUM WATER PIPES: All water pipes have machined grooves, first 3 are to retain the hose and the 4th is to identify where hose should slide up to

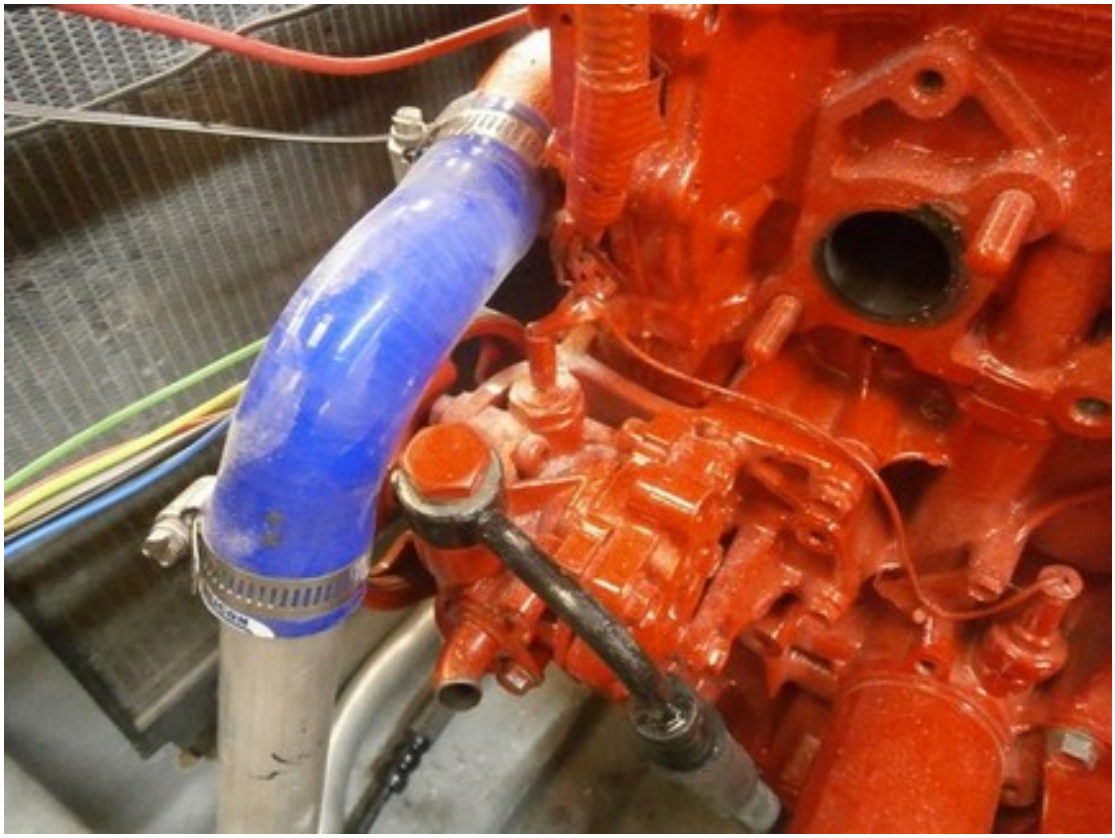
Inner aluminium pipe to rad top, outer pipe to engine top hose. Fit 1 ¼” i/d X 4” rubber hose

Check that the machined grooves on heat exchanger ends are clean and free of mastic



2 off 32mm P clip to hull under rad panel, also attach power steer hose (RHD only)

Fit top hose to engine



cut bottom hose

assemble bottom hose using 1 1/8” dia x 4” aluminium pipe

Turn left part of hose around so angled part attaches to engine. Note articulation of hose clips, hose is upside down in photo for clarity

## GEARBOX & ENGINE OIL

Check gearbox oil EP80W-90 GL – 5 mineral oil level
Access to gearbox filler is thru 2” rubber grommet on gearbox tunnel left side, TICK when filled……

Check engine for oil leaks, top up with 10W-50, TICK when filled……..

## RADIATOR

Clean rad then add 2 /3 layers 1/4” thick foam to rad sides and base
Bolt rad to rad panel use flanged M6 bolts make sure they do not screw into rad body when tightened, when rad is pushed back check that there is an air seal between rad and rad panel, if not add more foam

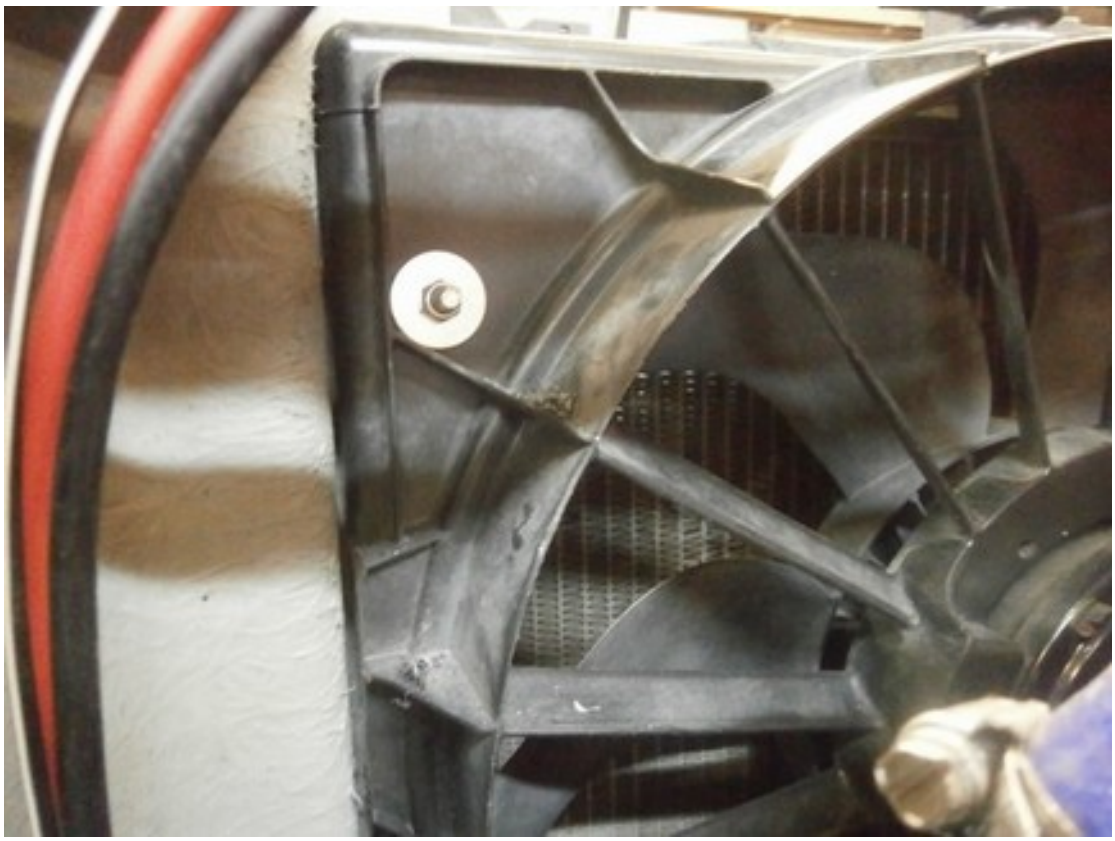
Fit lower hose assembly to engine and bottom rad

Fit top hose to rad

RAD FAN

Slot s/h Ford Mondeo Mk 3 fan down behind rad until the top of fan body is level with the aluminium rad

Drill 6mm hole top left thru GRP rad panel and bolt up just tight enough to grip fan shroud

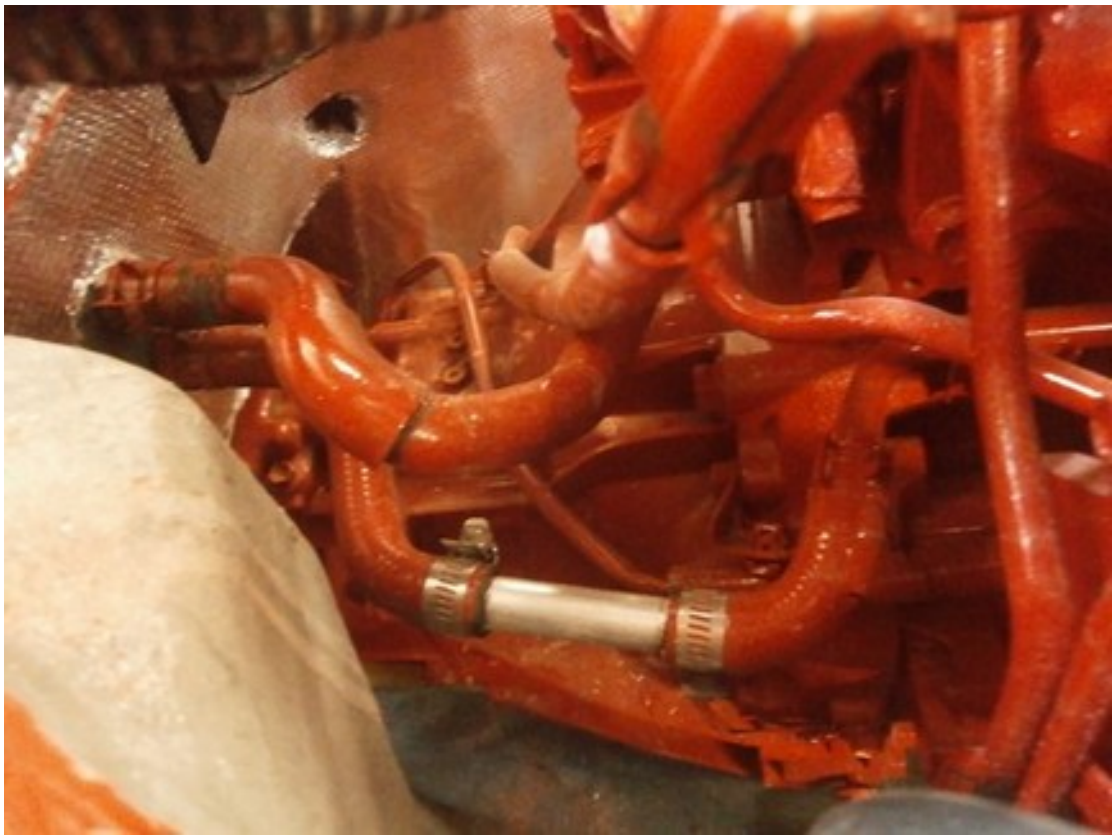


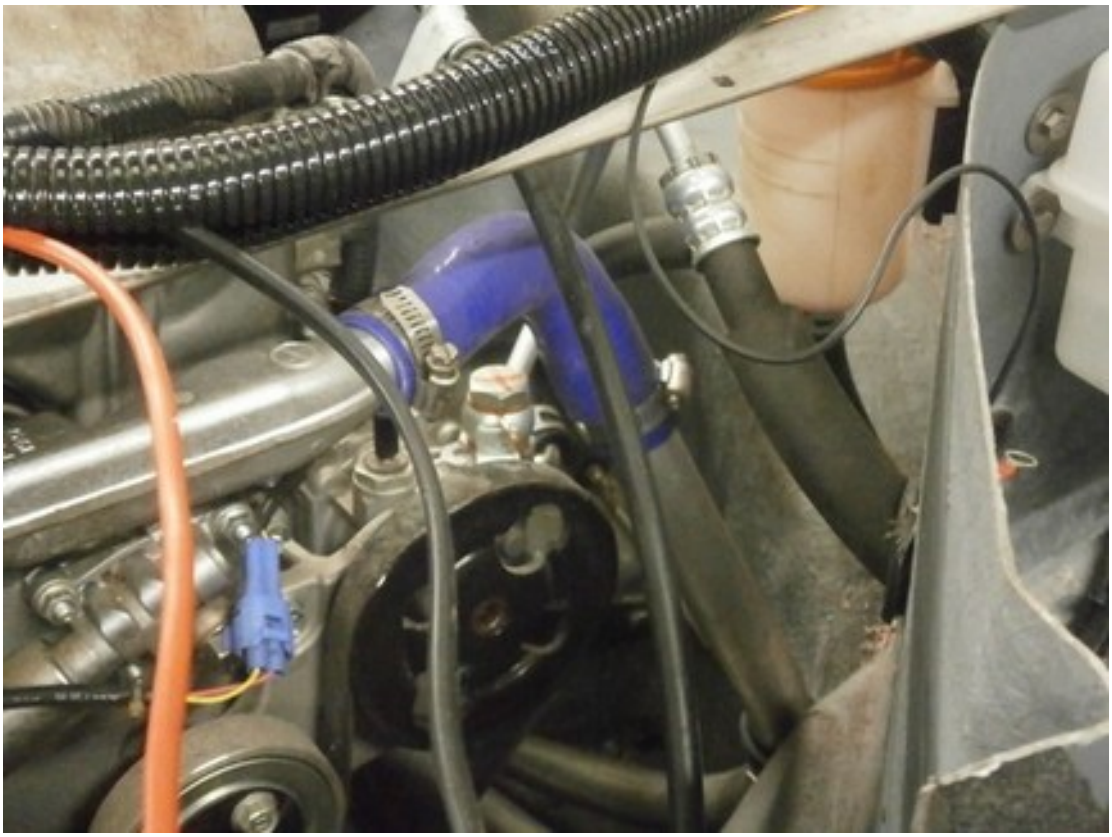
Drill 6mm hole mid thru  GRP rad panel and fan bolt up just tight

Drill 6mm hole thru RHS top in GRP rad panel and fan, bolt up M6 X 25 hex set, 2 penny, nylock

WATER HOSES

Fit heater hoses use 5/8” dia x 4” aluminium tube to extend lower hose hose





## ENGINE WATER

Water cooling system will require a 1st use prime. Remove rad cap, disconnect top hose at thermostat housing and force water thru aluminium pipe using house mains pressure until water pours out of the open thermostat end. Fit rad cap. Once this has been done the rad can be topped up using the rad cap as normal

## OIL SYSTEM

Fit Dowty washer and straight fittings to sandwich plate and bolt assembly to engine at angle shown

Oil hoses go straight from sandwich plate to oil cooler in any order use HIGRIP hose clips

Bolt 10 JIC banjo fittings to oil cooler. You MUST hold the hexagonal nuts fitted to oil cooler body when tightening fittings not the oil cooler body itself

Fit enough foam to 3 edges of oil cooler, bolt up 2 off 90 deg fitting – you must support the oil cooler using a spanner on final tightening of the fittings

Bolt oil support bracket to rad.
Bolt cooler to ss brk 2 off M6 x 25 hex set, nylock

Bolt up lower support to headlamp cross bracket, push cooler into rad to compress foam, mark out and drill strap to suit, make sure foam makes seal against the rad

## EXHAUST SYSTEM

Bolt modified exhaust manifold to engine using Suzuki gasket, short lambda to manifold, long lambda to 2nd cat, manifold studs might need to be removed before fitting manifold. Refit studs or use 10M bolts

fit heater shroud

Mastic or body filler GRP panel to hull leave 1/4” gap around pipe for engine movement

cross cable is steering Morse to rudder factory fitted

Slide exhaust system up to end of manifold under front wheel arch, check that spherical fabric seal is fitted to manifold and bolt up using Suzuki special bolts and springs

Fit 2 Suzuki exhaust rubber insulators to rear pre-fitted mount,

POWER STEER & HEADER TANK

cut down steering pump elbow

Bolt power steering bottle to GRP rad panel, couple up high pressure hose to steer box and hose to reservoir

Drill 6mm hole 1 ½" down from top thru header tank and fit M6 X 20mm hex set bolt and penny washer, drill GRP rad panel and fit

SCREEN WASHER

Bolt bottle to GRP rad panel, see wiring diagram at back of manual. Block rear pump hole with 17mm ss plug

# MILESTONE # 2 that completes most of the engine bay

PEDAL BOX & ACCELERATOR

LEFT HAND DRIVE bend accel pedal to clear GRP

RIGHT HAND DRIVE bend accel pedal to clear GRP

RIGHT HAND DRIVE

LEFT HAND DRIVE

Mastic face of servo and fit  thru hole cut in bulkhead and bolt up to pedal box, bolt top end of pedal box to top of deck 2 off M8 x 30 bolt + 2 off M8 nylock + 4 penny washer

Offer accelerator pedal to GRP tunnel to suit your driving position, bend arm so end lines up with cable hole, bolt pedal on to GRP, mastic outer cable to deck. Couple up to engine

## CLUTCH CABLE

Line up position for clutch cable thru pre-cut hole in GRP and metal pressing in pedal box. Couple up to engine. Mastic rubber grommet to deck

## DASHBOARD PREPARATION

Cut off forward edge of dash (template part is supplied with kit)

Bolt  2 off outer side support, note washer faces inwards and rearwards use 4 off M8 x 20 MS bolt and 2 off M6 button head screw + 2 nylock + 2 penny washer remove passenger air bag/mounting panel. Remove ALL air bags labels

INSTRUMENT CLUSTER

Remove instrument cluster and cover up air bag warning lamp. Unclip clear lens and black gauge surround, very carefully peel back instrument face and shine light thru panel to establish the correct lamp, tape over correct lamp then re-assemble and fit back into dashboard. DO NOT break the bulb

## TRANSFER BOX