

# HUSTLER

Journal of the kit car élite

no. 3



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Hello again. Newsletter No. 3. I think the best one yet. mainly because there is less rubbish included from me and much more from people who know what they are talking about as regards the finer points of building the cars.

I have had some really excellent articles from members, please keep it up. Special thanks this issue to John Hother from Hove in Sussex. I hope I will be able to include John's Jottings every time. If anyone has anything to add to the articles or wishes to disagree at all, please write in so that I can include it in future Newsletters. If you sent in an article and it is not included, do not despair and give up writing in. I have not discarded it. I am keeping it for future issues. I had intended keeping the front cover for members cars, but Mrs Towns sent me the photograph of the new Force 4 and details of it. As it is the New model in the Hustler range I thought you would all be interested in it. I think it is fabulous anyway, and I want one. I suppose that is one of the drawbacks of buying something from a prolific genius as William Towns. He keeps producing something better all the time. I was over the moon when I first got my car and I still get a kick out of driving it. But then he designed the Huntsman and I wanted one of those. Now he has produced the Force 4 and 6 and I want one of them now. I have made an extra effort this week with the Australian Football Pools, then I can have one of each. But by the time I strike it rich he will have designed something else, probably with Jaguar mechanics which I will want also. Its just not fair. Still, thats the advantage of being a member of the Hustler Owners club. I can come and drool over yours when one of you builds one of the latest models.

Recieved a letter from Peter Dance from Teddington, he has just bought one of the Hustler Sprints which were built. Peter publishes the newsletter for the Charger Owners Club. Don't forget, when you are out and about and meet someone with a Charger, say Hello, it all helps towards a feeling of comraderie. We all have the same sort of interest at heart.

Finally, a special mention to a very active club member ( see article page 5 ) Bill Brown of Coventry. Not wishing to cause Bill and Maureen any embarrasment, but Bill who has been confined to a wheelchair since a motoring accident in 1979, has almost finished building himself a Harrier. It was done without help, with the exception of lifting the heavier items ie, top half of the body etc. The car is now almost complete. I am sure we would all like to congratulate Bill on what must be considered an incredible achievement.

Trevor.

## COVER CAR

### HUSTLER FORCE 4 and FORCE 6

The first Hustler was born in October, 1978. Production of kits began in April, 1980, with nearly 200 cars now sold. With a possible permutation of 72 different models, the dominant feature of the design has always been a high waistline beam, topped on most models with unique sliding doors, over which the occupants step to enter. Although this aspect, permitting summer 'doors open' motoring, has been for many the attraction of the car, other would-be customers have quailed at the thought of persuading the mother-in-law to leap aboard. For these people, Force 4 and Force 6 have been created, linking Hustler's crisp, sharp styling to conventional side-hinged doors. These are moulded in two parts, bonded together with a GRP leathengrained trim-panel-cum-armrest, detachable for access to release linkages. The prototype uses BL inner and outer handles with Vauxhall Ventora electric window lifts, though many people will opt for a manual lift. In spite of the Glass sill level rising almost to the base of the windscreen, visibility is still outstanding by conventional standards, with large toughened glass hatchback for easy reversing. To achieve this level of access, the waistrail on both upper and lower frames is eliminated over the length of the door, though the door moulding is styled to carry through the traditional Hustler side beam. The upper frame is stiffened by buttresses under the bonnet, and prominent gusseting around the rear window aperture. The lower frame is dropped down and under the door to give a sturdy sill. General construction is as before, with interior moulding and under-bonnet panel sandwiched between the two frames. This time, though, the existing interior is cut away each side and an extra panel bonded or bolted in place to provide a flange for the door seal and to bridge from interior to frame and provide hinge and locking faces. Hinges bolt through this face into the steel frame, and are deliberately external to allow 90° opening, with an amazing 180° if wheelarch flares are not fitted, useful perhaps in applications not yet envisaged. The doors are a full four feet long (about the same as an Aston Martin) so that reaching the rear compartment is particularly easy for a two-door car. Six wheel versions are two feet longer with twin rear quarter windows, and either car can have inward bench or forward facing rear seats. Keen observers will note that the roof block at the rear is a little longer than before. This is the result of a change of rear window rake from 10° to 5°, the same as the side, and will allow in future a side hinged rear door made by adapting the same door engineering for a future, lower Harrier 2. Moreover, also on the drawing board is a long wheelbase full four door Force 4, using this rear door each side to give almost the interior room of a London taxi.

COVER CAR cont.

THE prototype takes advantage of the fact that there is for the first time body colour full length above the waistline to two shades of grey, with the frame a darker grey, to give a spectacular effect of banded colours, highlighted with a fine scarlet coachline. Inside, these colours are expanded with Woolfrace seats in red stripe fabric with matching rear seat cushions, a fine ribbed pale grey carpet and, contrasting with the dark grey door and quarter inners, a scarlet headliner and door-trims, the colour band running through into a special two tone facia panel. Altogether striking and up to date. The rear bench seats fold inwards to give a 14 sq ft. flat load platform with concealed well below for hiding the shopping, though forward facing seats are available as an alternative. Externally, a nudge bar painted to match the frame and a new accessory: the spare wheel carrier, plus Huntsman-style wheelarch flares add up to thoroughly professional turnout.

The car on the Front of the Newsletter is based on Austin 1300GT, though as with all Hustlers, Mini or Metro can be used instead. The standard wheels in fact suit the basic body width very well, (Mini based versions need offset to look right), but have been replaced here with 6 x 13 Weller 8-spokes wearing 185/60 Firestone tyres, the increased width requiring added flares. Headlamps are four of Halfords halogen driving lamps (under £8 per pair) two set dipped, two main beam.

Prices start at £1735 plus V.A.T. for a Force 4 kit and £1910 plus V.A.T. for Force 6.

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### METRO ENGINED HUSTLER

After reading the Hustler build-up in A.C. and the problems they encountered as regards installation, and when completed, overheating, I thought I ought to write to let you know how I tackled the job. All parts are standard British Leyland and are readily available. I have tried to include part numbers but my receipts have not been fully itemised and I have been unable to sort them out.

1. Remove Metro Engine mounts. Replace with 1275 GT front engine mounting bracket, part no. 12A 361, Alloy Adaptor plate part no. 12G 1318 and rubber mounting blocks.
2. Metro engine does not have By-pass Hose, therefore remove blanking plug from cylinder head( situated just below the Thermostat housing) and replace with threaded adaptor for by-pass hose. Then either carefully drill through the stub on the Metro water pump or replace with Mini unit. IMPORTANT. DO NOT OVERLOOK THIS MODIFICATION OR OVERHEATING MAY OCCOUR!!!
3. Fit 1275GT Radiator hoses and thermostat housing.
4. Use 1275GT Radiator, mounting brackets, fan and alloy spacer.
5. Although it is possible to retain Metro manifolds, I found it easier to saw off inlet, discard the exhaust and replace it with a Long Centre Branch type. As an alternative fit standard B.L. cast iron  $1\frac{1}{2}$  Mini Manifold.

Well thats about it, as you can see, fairly straitforward. The Metro Gearbox fits straight in but remember to fit lower Tie bar.

Bill Brown. Coventry.

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Bill, who served his Apprenticeship as a Mechanical Technician at British Leyland, and, still retains some links with them, has offered to help Club Members with any Technical Queries. If he can not answer the question personally, he will try to find out from B.L.

Trevor

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The following two articles were sent in by Gavin Hooper from London. I saw Gavin's Hustler Six at Kenilworth, it must be the most luxurious Hustler on the road. Gavin is the Managing Director of a major car storage company with a division specialising in collectors cars. As such he places a lot of business with Norwich Union, with whom he has a very good relationship. Therefore he has offered to help any club member with getting good rates. Anyone who needs help please contact me and I will put them in touch with Gavin.

Trevor

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I enclose a list of parts that I bought. I also think there are several golden rules that cut building time and expense. At the risk of sounding obvious I outline them here.

1. Look at other peoples complete kit cars before or early in construction.
  2. Start with a decent donor vehicle. Strip it down yourself - don't let anyone 'help' by scattering parts everywhere.
  3. Keep a large note book handy. Jot down what you have done and itemise any parts you know you will need.
  4. Compile a list of all you think you will need at the breakers yard. Don't stint on grab handles, light switches etc; don't be mean about throwing out perfectly good bits if you think a bit from a higher class car would look better. If you go to a breaker to buy a big load of stuff he will a) give a better service and b) reduce prices quite dramatically.
  5. Be realistic about the cost of your completed car and the time it is going to take. Always assume the worst and then be happy when it doesn't always happen.
  6. Try to get an overall picture of what you want your car to be - is it a minibus, jeep, fun buggy. And plan the car overall. This also prevents too much money being spent in one area.
  7. Be a dirty rotten cheat. Do not be too proud to copy other peoples good ideas.
  8. Do not start running the vehicle when it is half complete. this is the recipe for never detailing the car.
  9. Your car when it is complete should not look like a kit car. It should look like a professionally built vehicle and be at least as good as a production car. This can be achieved by a) avoiding obvious 'accessory' items e.g. Hong Kong switches, gauges: cheap 'leather' steering wheels, and generally ill fitting parts. b) Incorporating poor interior layout. Again take advantage of the millions spent in research by the manufacturers and look carefully at new cars in showrooms for tips. (Try not to buy a car while you are doing it!) Make sketches, outlines on kit panels etc. and let it develop during the course of build.
  10. Half way through the job hand the keys of the gun cupboard to your wife, best friend or probation officer if applicable. Don't get depressed when seemingly no progress is being made. It suddenly comes right!
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## MINI BASED SIX WHEELER

### SOURCES OF PARTS/REQUIREMENTS ETC. :-

Sunvisors and Rearview Mirror Triumph Dolomite. (Note 1)  
Mirrors, VW Audi door units.  
4 Headlamps (Avenger) Immeasurably improve vision.  
Seats, Rover 3500 SD Series. ( Note 1)  
Side repeaters if required.  
Instruments. Jaguar dials and switches.  
Mini Clubman speedo and Rev counter in pod.  
Halfords warning lights.  
Interior lights, Grab handles, Ash trays etc. Daimler Limousine.  
Floor lights in rear: Glass lensed reversing lights.  
Wiper Motor, Range Rover rear wipe with 120 degree sweep.  
Wiper Blade. Trico Brentford. ( Note 2)  
Fuel Tank, Fiat 128 rear mounted. ( Note 3)  
Seat Belts. Rover, mounted on bar under floor.  
Wooden Dashboard. John Fasal. 01 435 9292 expensive but fabulous.  
Trimmers, John Betteridge 01 584 5661  
Grilles, James Gilbert Ltd, 01 743 1566  
Letter Plates for Dashboard. Bold as Brass. 01 351 2255  
Stereo by Harry Moss plus extra speakers.  
Steering Wheel. ( New) Speedy Spares Brighton 417 889. ( Note 5)  
Dash Glove compartment fittings (if applicable) Jaguar.  
Four Yards of Fibreglass roofing insulation for roof.  
Two yards of underlay for under Bonnet.  
Side mounted Bonnet Clips.  
Roof mounted Radio Aerial.  
Speedo and other cables made to measure. Thos. Richfield, 935 0402  
Cigar Lighters.  
Map Lights (Chrome) T. Chapman Ltd. 373 1194.  
Window Heaters. ( Lucas) T. Chapman Ltd.  
Steering Coloumn. Morris 1100. (Raises wheel 2 inches.)  
Under Bonnet light. Any interior light.

### NOTES.

1. Try Dolomite seats and handles etc. as well.
2. Trico were very helpful.
3. Including neck and lock. Fits Flush.
4. Any Brass shop or engraver.
5. New Clubman wheel & Leathercloth Centre are uncannily like Bentley Mulsanne!

Gavin Hooper. London

## JOHN'S JOTTINGS

### 1. Chassis Aspects

#### 1.1. Front Subframe

Some explanation of the variants may be of assistance, so let us look at the most obvious area: the top mounts. On each side there is one large hole passing vertically through both the transverse and diagonal bracing tubes where they cross, and two smaller holes through the transverse tube only. For "wet" (Hydrolastic) suspension, the large hole is used for the hydraulic pipe emerging from the suspension displacer unit, and the two smaller holes are used to take the bolts which clamp the subframe to the chassis. For "dry" (Moulton rubber) suspension, the large hole provides access for the special compression tool which compresses the rubber spring ("cone") in order to permit dismantling of the suspension without having to first remove the subframe from the car.

However, there are two versions of the "dry" suspension: the early type uses the two smaller holes for the mounting bolts, as per "wet", whereas the later type uses a large central mounting bolt through the large hole. With the later type, the bolt is temporarily removed to give access for the compressor tool.

#### 1.2 Adjustable Ride Height

If using "dry" suspension, the "Hi-Lo" adjustable front trumpets are well worth having so that the car's front-end ride height can be easily adjusted. In this case the same large hole is used for access for the special tool for this purpose, as is used for the spring compressor tool. The steering characteristics (particularly stability) are surprisingly sensitive to the front-end ride height, especially if one of the larger engines (ie 1275cc) is used. For my 1275cc Hustler Six, I find that the optimum is with the inner ends of the drive-shafts roughly half an inch higher than the outer ends, with the car unladen.



### 1.5 Rust-Proofing Subframes

Rear subframes are a weak spot for rusting. To avoid trouble later, I had all my subframes hot-dip galvanised (though the front one rarely suffers in practice due to engine oil mist and engine warmth). From personal experience, I can advise that there is no substitute for hot-dip, and it is not significantly more expensive than the numerous "alternatives" such as cold galvanising, flame-spraying, zinc-rich paint, etc. The problems are mainly:

- (a) finding someone with a sufficiently large tank but willing to do such a small job by industrial standards
- (b) removing paint from the subframe before plating
- (c) avoiding blockage of holes, especially threaded ones, by zinc

Galvanisers don't mind grease or rust: they use a hot concentrated acid pickle bath to remove both before plating. Unfortunately, significant amounts of paint will "poison" the pickle, so the subframes will need to have paint-stripper or grit-blast applied first. This paint removal can cost more than the galvanising!

The separate pivot brackets for the radius arms should be unbolted from the subframes before galvanising, otherwise the plating process will "glue" them permanently in place, preventing subsequent assembly of the radius arms. Identify which bracket belongs with which subframe (if you are building a Six) by filing notches in them, since they are line-bored in manufacture for accurate camber and castor angles.

Any threaded holes get bunged-up with zinc, and plain holes end up slightly smaller. Therefore, either fill all the holes with bolts made of a material to which the zinc will not adhere (such as stainless steel) or, after galvanising, drill out the holes. In the latter case, use tapping-size drills for the threaded holes and follow with a tap, taking care only to clear the existing threads and not to cut new ones, which would be very weak.

## 2. Discussion Points

### 2.1 Steering Geometry

The required Ackerman angles are dependent on the effective wheelbase, but for a Hustler Six is that measured from the front axle to the forward rear axle, or to the rearward rear axle, or somewhere in between? At the moment I favour the former, from observation of the mainly skidding motion of the rearward rear wheels when cornering, but I will be looking at it in more depth soon. It may even turn out to be interactive, with the Ackerman angles influencing which of the rear axles is dominant in determining the cornering wheelbase.

Related aspects in choosing which steering arms give the correct Ackerman angles are firstly, that Mk.I and Mk.II Minis have different steering arms with different angles, and different rack lengths, and secondly that Mini saloons and Mini vans have different wheelbases.

### 2.2 Open-Air Motoring

I feel it is a great shame that the roof is no longer removable. I am intending to make mine removable, but the double-skin roof construction and roof console complicate matters. The use of a tinted transparent panel, perhaps three-quarters of an inch thick, replacing the forward roof area, seems the most likely solution. Lewmar at Portsmouth make yacht deck-hatches from such material, and may be able to help with the machining and the supply of fittings and seals. I am investigating this, along with the choice of material, eg Perspex, Cobex, Lexan, Makrolon.

## 3. Outstanding Problems

### 3.1 Sliding Doors

My major problem is still rattling glass panels. I still cannot find a cure: has anyone had real success in this respect?

### 3.1 Sliding Doors (continued)

Although I haven't experienced this yet, driving with the windows open could result in their slamming shut under heavy braking: their considerable weight makes this potentially dangerous. I have considered using a sprung detent catch engaging notches in the bottom channel, and linked to the inner handle of the lock, but it is still looking complicated at the drawings stage.

If the door handles are locked from the outside, there is no emergency escape from inside the car. I have designed a sprung striker-plate assembly to overcome this, but haven't yet made it.

### 3.2 Windscreen Vibration

The windscreen vibrates because it is flat and large (and toughened, which is thinner than laminated glass). This causes the suction-mounted rear-view mirror to vibrate with it.

### 3.3 Rear Screen Sealing

The rear screen, being flat and large and frameless, bows slightly due to the single central lock, and the bottom corners do not seat down adequately on the rubber seal.

## 4. Future Topics

(a) Handbrake. I have abandoned the Mini handbrake in favour of a Bowden-cable type which gives a balanced action for twin rear axles, and mounts between the front seats above the fuel tank.

(b) Servo vs Dual-Circuit Hydraulic Brakes.

(c) Fuel Filler Assembly and Cap.

(d) Brake Balance by Inertia Valve.

(e) Fibre Optic feedback to driver of external lamps.

John Hother

Any articles or letters for publication, controversial or otherwise should be addressed to me at the following :

Trevor Faithfull

4 Lodge Close

Church Lane East

ALDERSHOT

Hants. GU11 3TA

Tel. Aldershot ( 0252 ) 310191

Please try to remain within the bounds of the obscene publications act if possible.

DO IT NOW!!!!!!

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Thirtythree owners of Hustlers, either completed or in the process of building have now joined the club.

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KIT-CAR BUILDERS DO IT FOR LOVE.

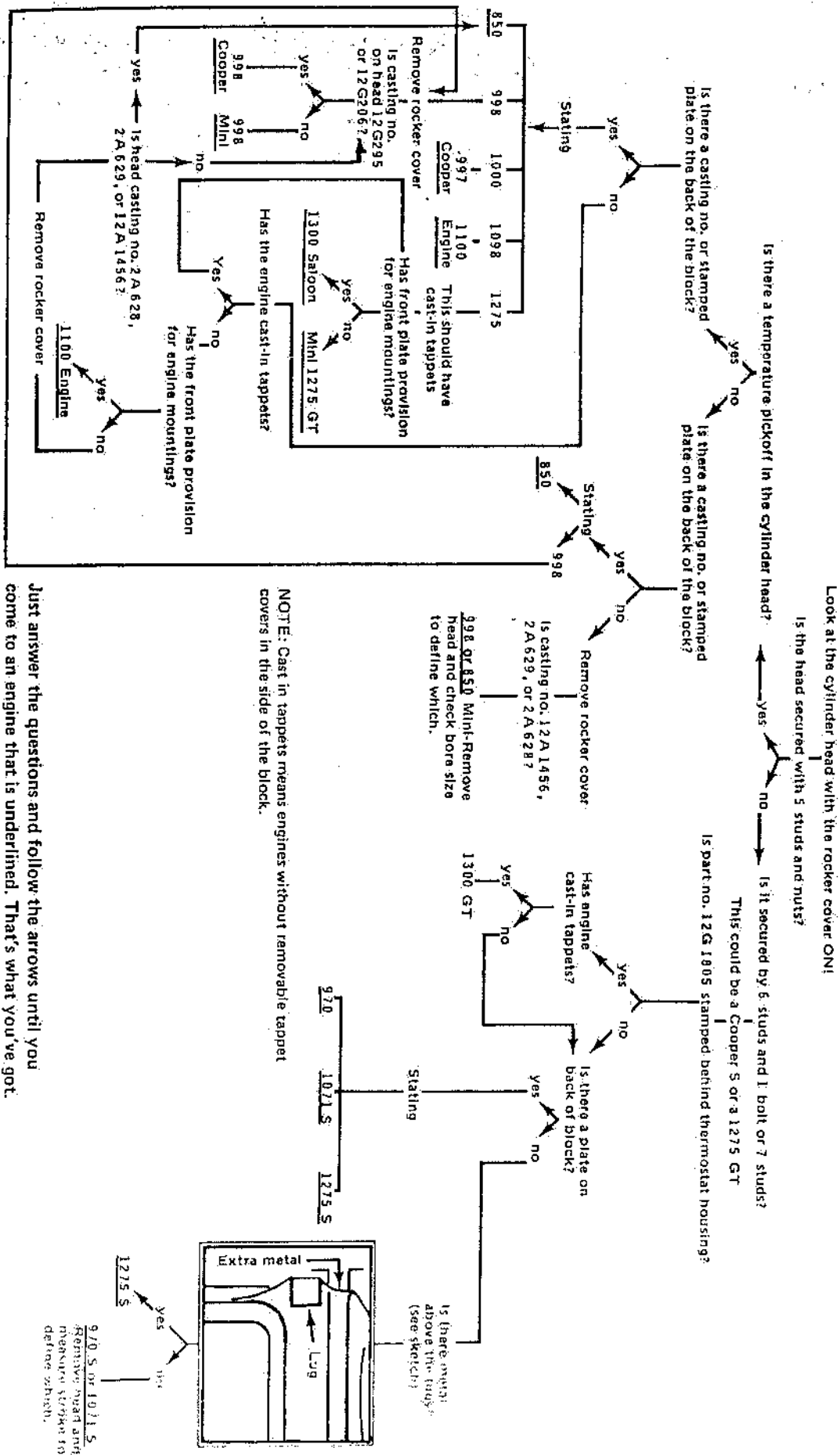
KAMIKAZE PILOTS ONLY DO IT ONCE!!!!!!

( oops I think I have spelled that wrong)

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The Newsletter was already completed when I recieved this jem of information from Peter King who lives in Harlow. I thought it was such a useful chart that I have included it in this Newsletter.

## TRANSVERSE ENGINE IDENTIFICATION CHART (So you know what you are buying at the Breakers)



NOTE: Cast in tappets means engines without removable tappet covers in the side of the block.

Just answer the questions and follow the arrows until you come to an engine that is underlined. That's what you've got.

