

Shorrock supercharger, ovvero “ingozza l’oca”

di Giancarlo Cavallini

Mi ricordo bene, la prima volta che parlai di questo progetto al mio caro amico Tullio, il suo silenzio e quel suo sguardo che tradiva un’espressione tra la pietà, la disperazione e la compassione. Probabilmente non



si capacitava di come potessero venirmi certe idee e che mi potessi lanciare in una avventura che rasentava l’incoscienza e probabilmente lo avrebbe coinvolto come mio complice. Poi, dopo un breve silenzio e una volta ripresosi, mi disse: *“Beh, in fin dei conti il principio è sempre quello: ingozza l’oca!”*. Poche sere prima avevo parlato con Syd Hurrell dell’idea di installare un compressore Shorrock su un motore GA 1147 Triumph a bassa compressione che dormiva sogni tranquilli nel mio garage e la sua risposta era stata alquanto lapidaria: *“in a nutshell the answer is no. The reasons for my answer are rather complex but sufficient to say, that my answer is based on sound facts. No. No. No.”*

Eppure è innegabile che questa soluzione aveva trovato negli anni cinquanta e sessanta una seconda giovinezza, e con questa il successo, dopo la gloria vissuta negli anni venti e trenta quando non poche auto sportive montavano soprattutto i compressori volumetrici a lobi di tipo Roots. Questo accadde grazie soprattutto alla intraprendenza di Christofer Shorrock che credette nella possibilità di produrre dei piccoli ed economici compressori volumetrici da vendersi in kit, facili e veloci da montare, e capaci di trasformare delle “pacciose e asfittiche” automobili in piccoli razzi.

La storia di Chirs Shorrock iniziò negli anni venti quando i suoi studi lo avvicinarono alle problematiche della sovra-alimentazione; poi nel 1934 con il fratello Noel avviò la “Centric Super-Chargers Ltd.” in Bow Line a Preston, nella contea dello Lancashire.



Più che un’azienda inizialmente si trattava di uno studio di progettazione e di un ufficio di vendita, ma allo stesso indirizzo risultava presente la Dilworth and Carr Ltd., un’azienda meccanica di tubi e idraulica che disponeva delle giuste attrezzature e della tecnologia per costruire i compressori volumetrici per la Shorrock.



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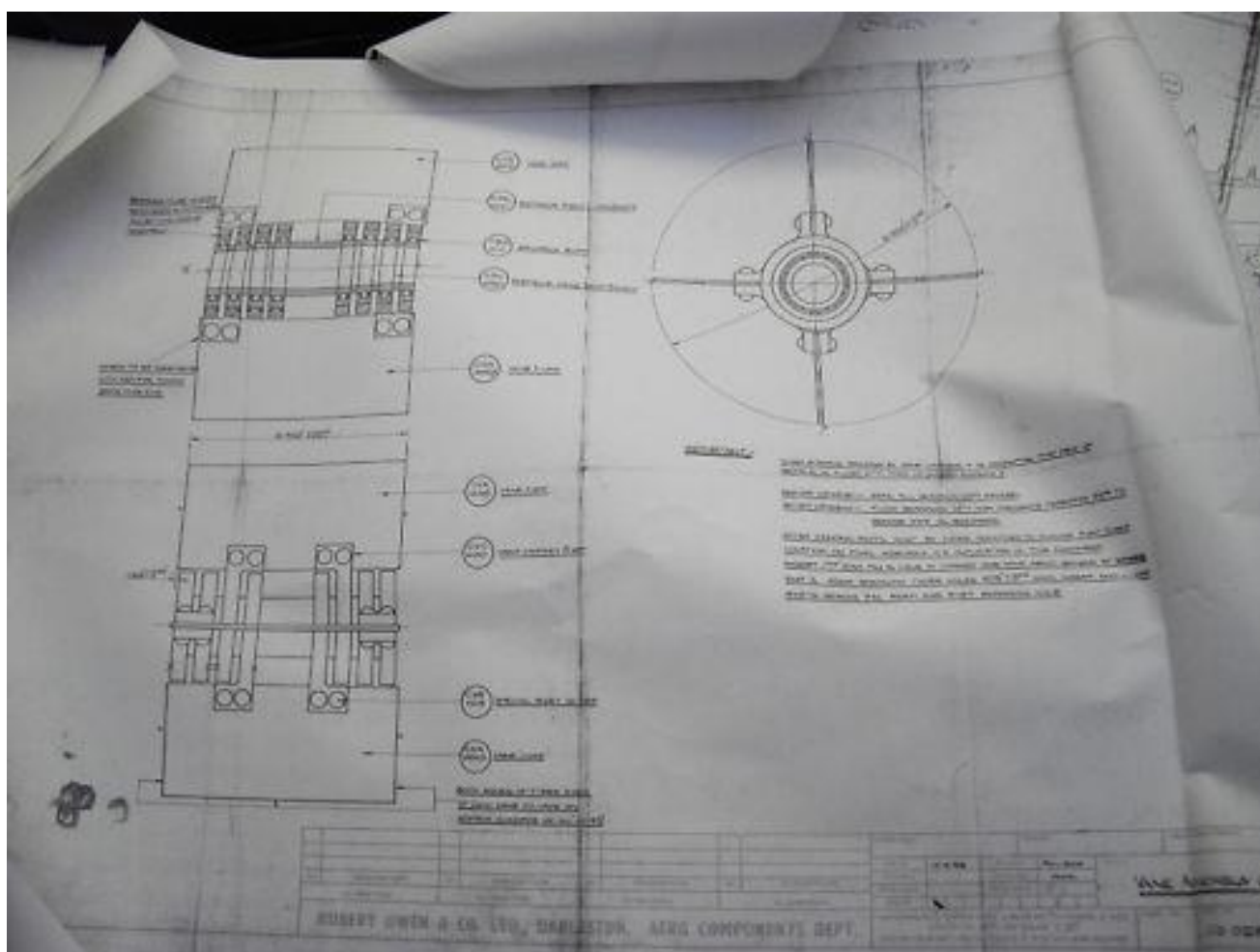
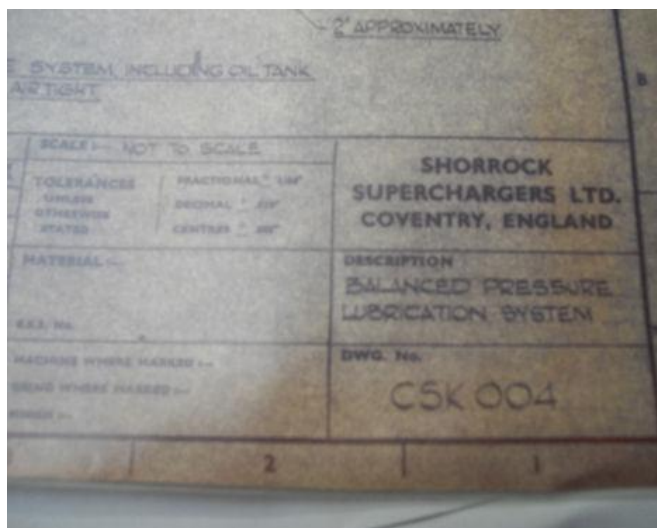
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Nel 1946 la Centric Super-Chargers Ltd. cambiò nome diventando Shorrock Superchargers Ltd. e nel 1949 l'azienda fu trasferita da Bow Lane a "Moorlands" Garstang Road, sempre a Preston, dove rimase fino al 1950. In quegli anni la promozione dei prodotti della Shorrock avveniva soprattutto grazie al supporto dato da Shorrock ai tentativi di record che, in quel periodo, avevano grande risonanza. Nel corso degli anni successivi l'azienda visse una lunga serie di cambiamenti, trasferendosi prima a Coventry e nel 1957, quando l'azienda fu incorporata nel Gruppo Owen, a Wednesbury, a nord ovest di Birmingham, dove rimase fino al 1960. In quegli anni erano in produzione diversi kit che coprivano la gran parte dei marchi britannici che avevano in produzione auto con motori di piccola e media cilindrata: M.G., Morris, Austin, Riley, Wolseley, Ford, Standard, Triumph. Non mancavano comunque soluzioni per motori esteri, soprattutto Renault e Volkswagen.



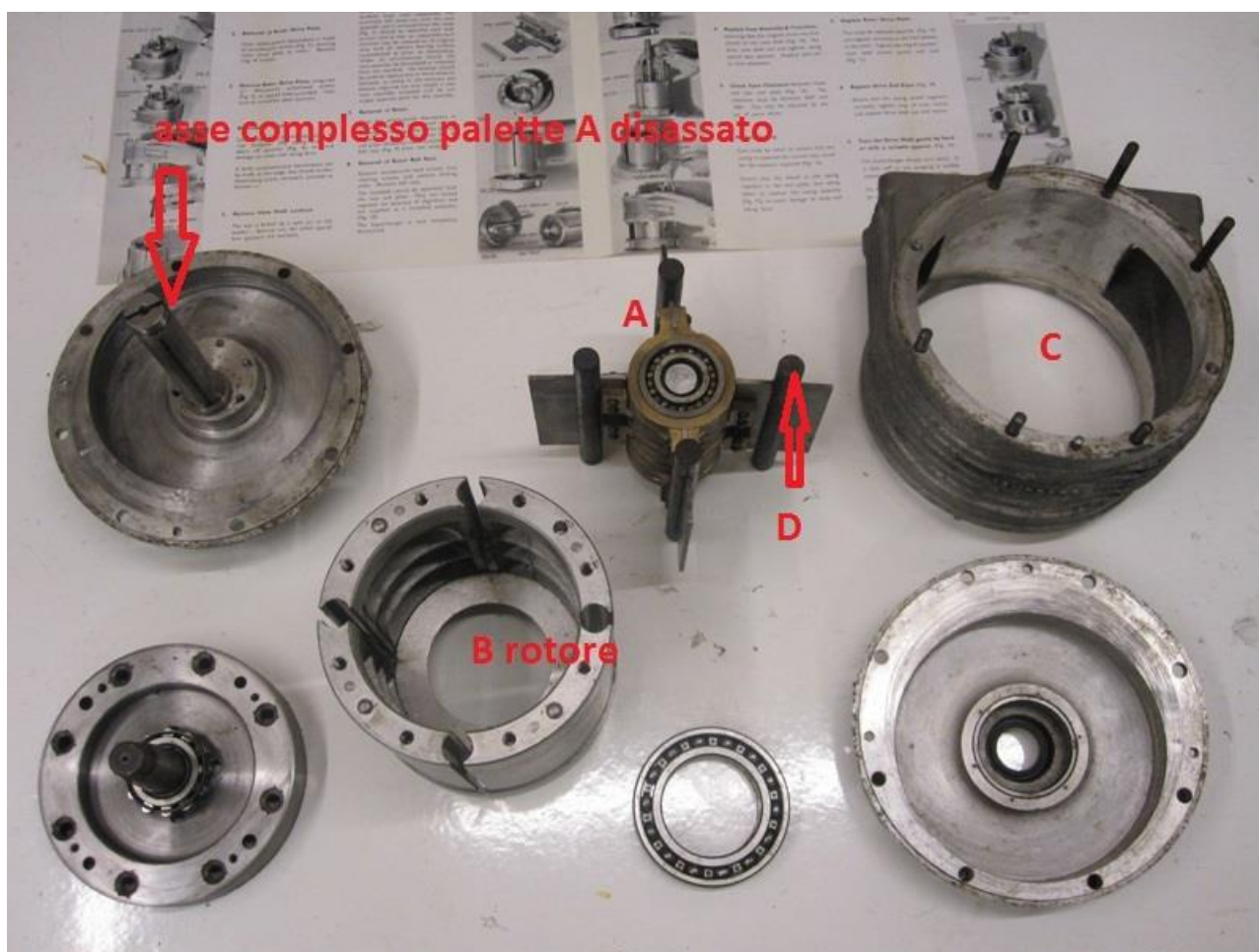
La Shorrock produceva esclusivamente compressori a palette: più semplici, compatti, leggeri ed economici rispetto ai compressori a lobi, questi avevano però come limite il rischio di surriscaldamento, ma la Shorrock era riuscita ad ingegnerizzarli in modo da renderli molto efficienti ed affidabili.

Inoltre un sistema di lubrificazione automatico ben studiato, da collegare direttamente al circuito in pressione dell'olio motore, provvedeva a limitare la manutenzione e ad allungarne la vita del compressore. Una buona progettazione, l'uso di materiali di qualità e la disponibilità di buone attrezzature di lavorazione meccanica erano quindi riusciti a garantire una buona affidabilità al prodotto e una buona reputazione alla Shorrock.

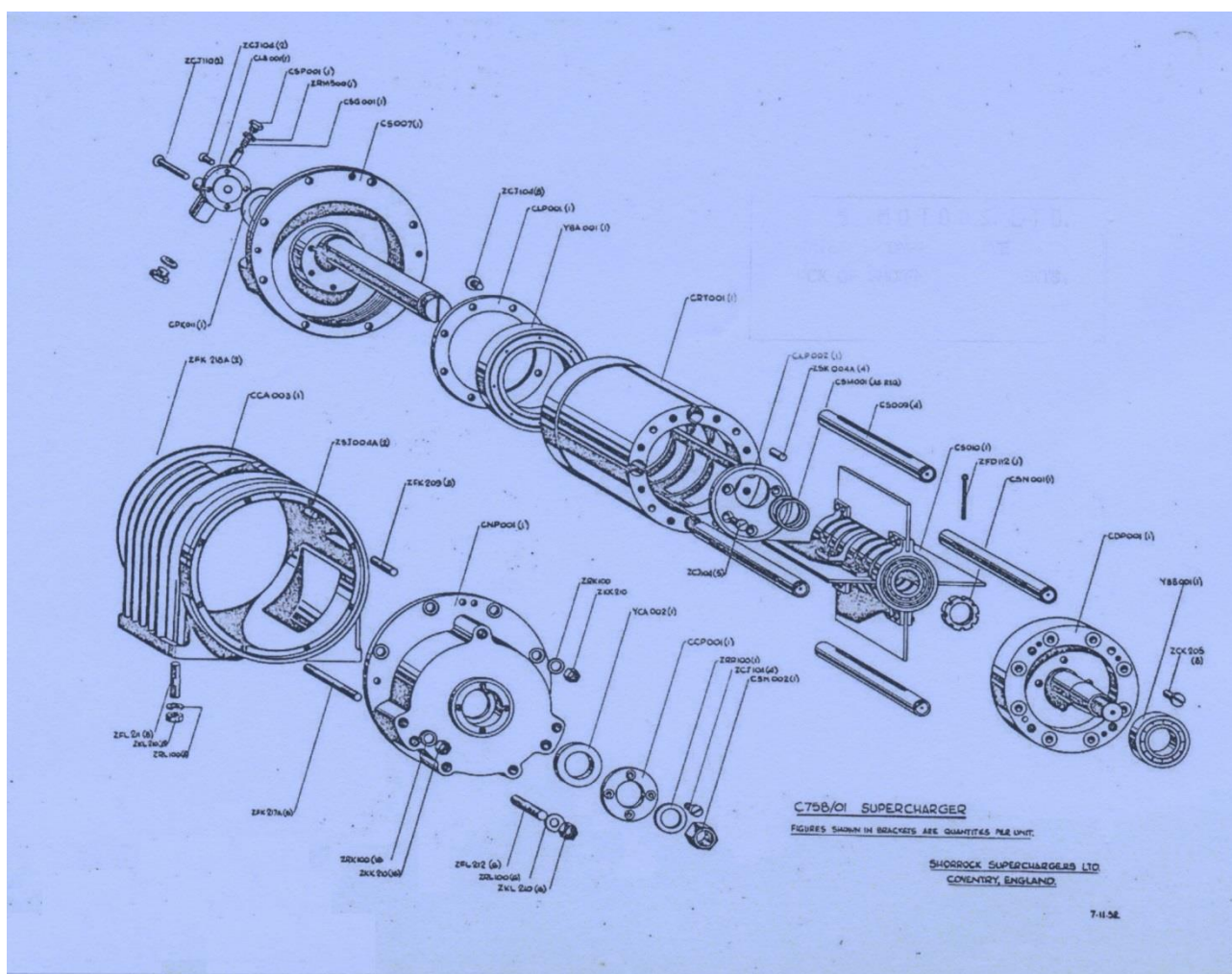
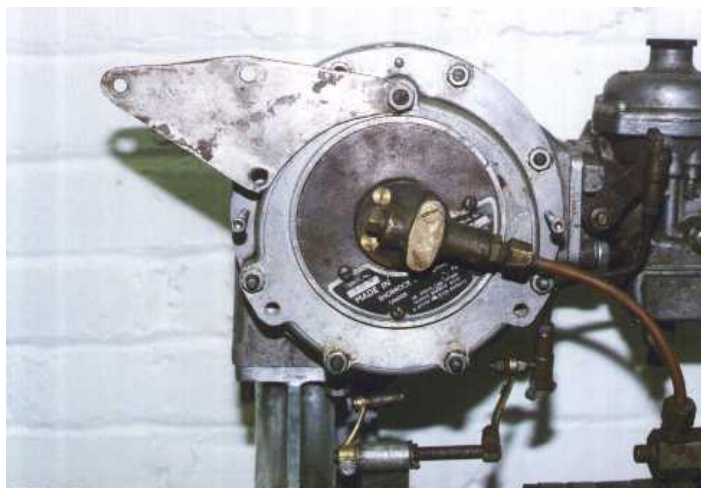


COME FUNZIONAVANO GLI SHORROCK E IL LORO SEGRETO

Diversamente dai tradizionali compressori a palette, al cui principio comunque si rifacevano, il disegno degli Shorrock introduceva una soluzione innovativa. Le palette erano infatti fissate rigidamente ad un supporto cilindrico che, su cuscinetti, ruotava liberamente e in modo coassiale su un albero che attraversava il compressore e che era disassato rispetto all'asse della presa di forza. Le palette non erano quindi libere di muoversi radialmente per essere soggette alla forza centrifuga di rotazione che le avrebbe spinte, durante la rotazione, contro le pareti interne del carter, ma erano fisse. Questo complesso "A" si presenta a forma di "+" e viene inserito nel tamburo rotante "B". La tenuta e lo scorrimento all'interno del tamburo rotante viene garantito dai perni cilindrici "D" ciascuno dei quali presenta un taglio lineare di passaggio per lo scorrimento della sua palette. Il tamburo "B" ruota su cuscinetti all'interno del carter spinto dall'albero di forza e disassato rispetto all'asse del complesso "A": in questa rotazione trascina con se il complesso interno "A" delle palette che creano ruotando con il tamburo le camere, a forma di "mezzaluna", di aspirazione a depressione e soffiante, creando l'effetto pompa. Le palette sfiorano il carter senza toccarlo.



In questo modo le palette ruotando non strisciano l'interno del carter grazie allo studio delle corrette tolleranze e questo porta quindi il compressore a lavorare "freddo" e senza grandi necessità di lubrificazione.



La Shorrock nel kit con il compressore forniva i collettori specifici, un carburatore S.U., la valvola wastegate per la sovra-pressione, il manometro della pressione, le tubazioni per l'olio, le flange di fissaggio, le cinghie e le pulegge con i corretti diametri in modo che il compressore pompasse la corretta quantità di miscela in funzione della cilindrata del motore a cui era applicato. Diversi erano i modelli in commercio, per adattarsi a motori di varia cilindrata, e tutti concettualmente identici: C75B, C142B, C250B. Ad esempio, il modello C75B poteva essere utilizzato su motori fino a 1300 cm³ di cilindrata: la "C" indica la capacità o portata, il

Shorrock supercharger, ovvero "ingozza l'oca"

numero "75" questa capacità in cm^3 per ogni giro, in questo caso 750, mentre la lettera "B" significa Boost, cioè spinta. Il compressore veniva infatti posizionato tra il carburatore e il motore: a monte aveva il carburatore, valle il motore e il compressore lavorava spingendo la miscela già pronta.



Il kit veniva venduto in una cassa in legno con tutte le istruzioni per un facile e veloce montaggio. La principale raccomandazione era di non usare questi compressori su motori con una compressione superiore a 8:1 mentre pressione di sovra-alimentazione era impostata in fabbrica a 0,34 bar.



La disponibilità del kit anche per i motori della serie SC della Triumph e per i motori di due litri portò ad una discreta diffusione degli Shorrock sulle Standard 8/10 e sulle Triumph Herald, TR2 e TR3, anche perché i risultati, in termini di incremento di prestazioni, erano oggettivi.

Aumentava infatti la potenza e con essa l'accelerazione, la ripresa e la velocità.

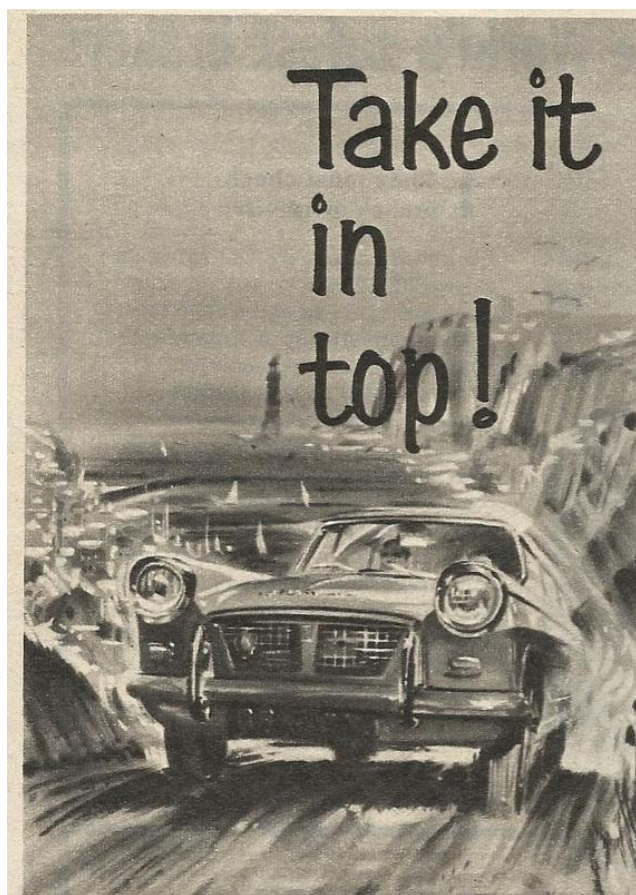
Più raro era invece trovarli sulle prime serie delle Spitfire, proprio per il più alto rapporto di compressione presente sui motori della serie FC, anche se comunque non mancarono installazioni.

A frenare la diffusione per le Spitfire fu soprattutto la nascita, grazie alla SAH di Syd Hurrell e alle esperienze di Kas Kastner, di un mercato di componenti di tuning che permettevano aumenti di potenza con meno complicazioni meccaniche.



In queste foto l'installazione di un compressore C75B su un motore Triumph Spitfire e di un C142B su di un motore TR2.

Più sotto pubblicità ed installazione su una Herald Coupé.



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Thrill to the new kind of motoring you get
with **Shorrock Power**... spirited acceleration...
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performance in top which flattens out the hills.



SYDNEY ALLARD

famous sporting motorist says:-

"The simplest, safest way to get the most power
from a modern engine is to fit a **Shorrock Pressure
Charger**. You can get your **Shorrock** fitted in
a matter of hours and easy terms are available.
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* There is a **SHORROCK** unit for most popular cars. Put a tick
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Other Model.....

Name.....

Address.....

P.M.



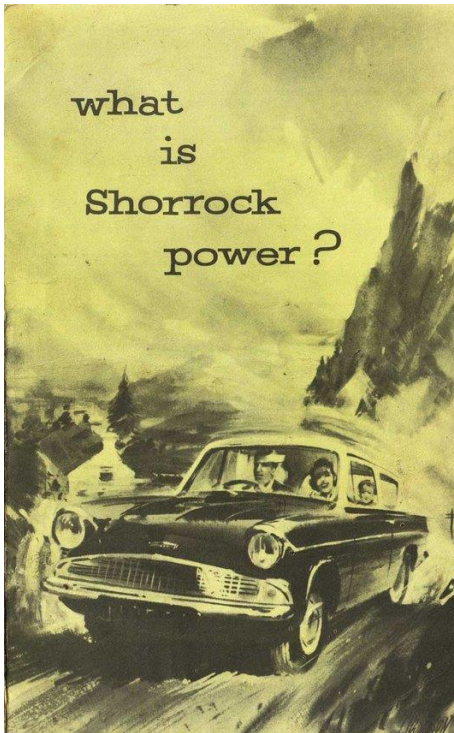
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Telephone: MACaulay 3201

World distributors for all **Shorrock Pressure Charger**





what
is
Shorrock
power?

Christopher
Shorrock
explains....



"SHORROCK POWER is the name we have given to the dramatically improved performance which you will achieve simply by bolting a Shorrock Supercharger to a modern motor engine.

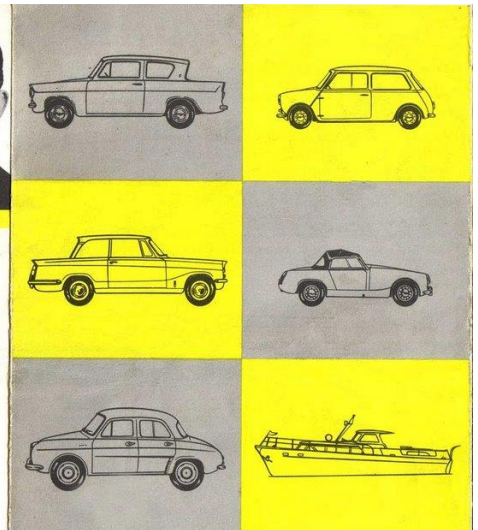
The function of the Shorrock Supercharger is to feed each cylinder under pressure with at least a third more fuel mixture than normal. We thus achieve a similar percentage increase in effective engine capacity; for example, a 1500 c.c. engine effectively becomes a 2000 c.c. unit.

Performance tuning usually achieves extra power at the cost of higher engine r.p.m. A Shorrock Supercharged engine, on the other hand, can develop up to 50% more power than the standard motor without an increase in r.p.m."

... and answers some questions from
everyday motorists

Does supercharging impair the basic engine? "On the contrary, extensive testing and over twenty years of experience prove that Shorrock superchargers not only increase thermal efficiency, but also reduce engine wear. This is because all cylinders operate with a mixture of equal strength. This even distribution gives longer life to the engine and prevents local mixture starvation to any one cylinder. Furthermore, a common cause of bore wear is inadequate lubrication on cold starting. On starting, the Shorrock distributes the surplus oil which has collected in the supercharger casing, thus providing extra upper cylinder lubrication when it is most needed.

What modifications will have to be made to my engine? "None! Most cars have sufficient space under the bonnet to take the Shorrock. The complete installation can be carried out by a competent owner-driver or appointed Shorrock stockist. The cost of 'sports-type' sparking plugs is the only 'extra'. When you change your car, your Shorrock can be transferred, providing the engines are of reasonably similar capacity."



THE ALLARD MOTOR COMPANY
24 CLAPHAM HIGH STREET, LONDON, SW4
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World distributors for all SHORROCK Superchargers

PRINCIPLES OF THE SHORROCK SUPERCHARGER

WHAT IT DOES

The function of a supercharger is to allow a larger quantity, by weight of petrol-air mixture, to be fed to the engine than could be induced in the normal way.

With the SHORROCK-Supercharged engine operating at a maximum boost pressure of 7 lb./sq. in., air is drawn through the carburettor into a compressor, the capacity of which is so arranged that it draws a volume of air equal to the FULL SWEEP VOLUME (or capacity) of the engine PLUS ONE-THIRD. The power output is increased proportionately, i.e. 33% at least. Thus an engine of 1500 c.c. capacity supercharged at a pressure of 5 lb./sq. in. has the same effective capacity as an engine of 2000 c.c.

Pressure charging has not been more universally adopted in the past as it is only comparatively recently that a compressor has been designed to meet the requirements of the modern car in that the compressor should be quiet in operation and as reliable as any other part of the engine.

The Shorrock supercharger, with many exclusive features in its design, is eminently suitable for pressure-charging the normal car in addition to the supercharging of racing cars, having been proved in both spheres to be a unit of remarkable efficiency.

HOW IT WORKS

The Shorrock Supercharger is a positive displacement eccentric-drum-type

compressor employing four vanes. The vanes are impelled by the internal rotor which is mounted eccentrically to the outer casing and through which the vanes pass. This construction makes practical the very fine clearances necessary for high efficiencies, since the vanes being mounted radially to the casing and anchored by the vane shaft cannot come into direct contact with the casing and can be run at very high speeds entirely without friction.

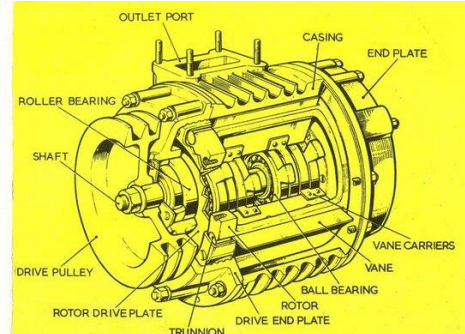
The four vanes passing through the rotor virtually sub-divide the crescent-shaped chamber into four separate chambers. The inlet port of the supercharger is so positioned that as one of the chambers receives its full volume of air, the adjacent chamber (on the inlet side of the unit) is increasing in volume and creating a vacuum at the inlet port.

Immediately the vanes have reached the position where the chamber between them contains the maximum volume, the volume between the vanes diminishes as the space between the rotor and the casing becomes less, thus compressing the charge within the supercharger itself before releasing it through the outlet port into the engine manifold.

Lubrication is fully automatic and only a very small quantity of lubricant is required for the supercharger to function with complete reliability.

The supercharger is preferably mounted on the inlet manifold side of the engine and driven by vee-belts from the front end of the crankshaft.

For competition work, it is sometimes best to modify the back axle ratio to get maximum benefit but in the overwhelming majority of cases, no modification to any part of the car will be found necessary.



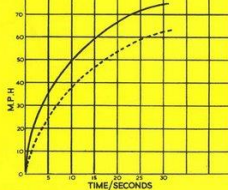
* OVER 50% MORE POWER * SPIRITED ACCELERATION * BRISKER THROUGH THE GEARS * SPARKLING TOP GEAR PERFORMANCE * FEWER GEAR CHANGES * TAKE HILLS IN TOP * HIGHER MAX.SPEED *

COMPARATIVE PERFORMANCE FIGURES

BMC 850 'A' SERIES ENGINE

(As fitted to Mini-Minor and Austin 7)

ACCELERATION THROUGH THE GEARS

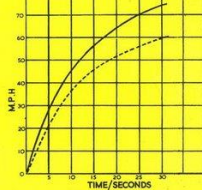


MAXIMUM SPEEDS
Standard Engine 70 m.p.h.
SHORROCK SUPERCHARGED 85 m.p.h.

BMC 950 'A' SERIES ENGINE

(As fitted to Morris Minor 1000)

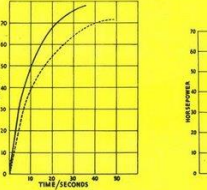
ACCELERATION THROUGH THE GEARS



MAXIMUM SPEEDS
Standard Engine 72.4 m.p.h.
SHORROCK SUPERCHARGED 86 m.p.h.

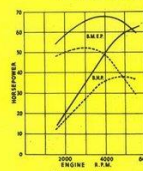
FORD ANGLIA 105E ENGINE

ACCELERATION THROUGH THE GEARS

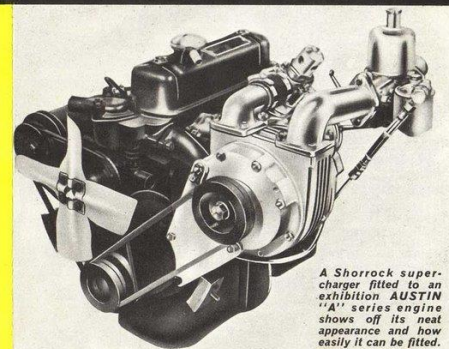


MAXIMUM SPEEDS
Standard Engine 73.8 m.p.h.
SHORROCK SUPERCHARGED 91.4 m.p.h.

POWER CURVES

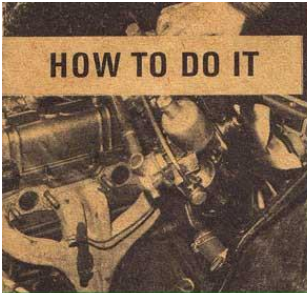


Standard Engine
SHORROCK SUPERCHARGED

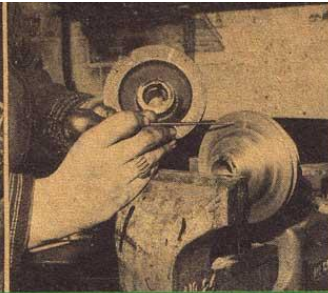


A Shorrock supercharger fitted to an exhibition AUSTIN 'A' series engine shows off its neat appearance and how easily it can be fitted.

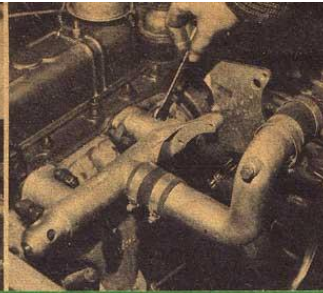
HOW TO DO IT



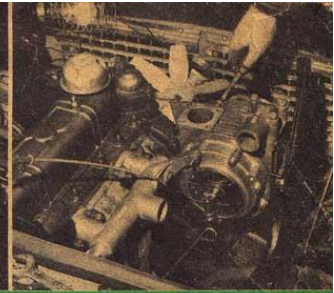
Disconnect hoses, remove the radiator. Undo fuel pipes, also throttle and choke connections, unbolt and remove one or both manifolds (depending on the kit)



Undo crankshaft pulley nut and withdraw pulley. Remove water-pump pulley. Match positions of old and new pulley keyway, then accurately mark up timing line



On Triumph take out two water-pump bolts so that a mounting bracket can be fitted. Assemble bracket and manifold up loosely before fitting remainder of unit



You may have to remove two of the blower studs to manoeuvre unit into place. Replace studs. Tighten unit onto mountings and then tighten up the other bolts

SPEEDSHOP SPECIAL



A "Shorrock" from Allard's

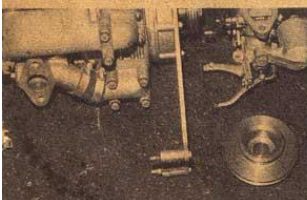
Do you really know what it means? Quite simply it's this. Your engine is "volumetrically inefficient". In other words for every 1000 cc of capacity of your engine, it will only take in about 750 cc of fuel/air mixture, then the valves shut tight and that's that! The blower makes sure that the engine gets its proper full of fuel/air mixture, and just a little more for good measure. And what a difference it makes to any engine.

Benefits of a blower unit over some of the expensive tuning kits giving anything like the same power increase are: there is no alteration to the engine itself except the manifolding; it does not need constant tuning; it starts and idles well; engine is much more smooth; choke is not needed at all once the engine starts; the power is developed in the lower rev range and doesn't depend on super-high revs; and the unit can be swapped from one car to the other of a similar capacity range.

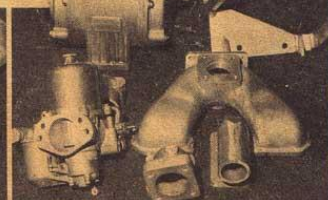
A modest disadvantage is the consumption of oil to lubricate the blower on a "loss" system, which works out at between 1 pint every 100 to 300 miles, depending on the performance you extract from the

SUPERCHARGE

KITS & EQUIPMENT



Just £59 buys the cheapest of the blower kits that fits the Anglia, Mini and 1100 range, Sprite, Midget and A40. You can buy a blower unit only for £38



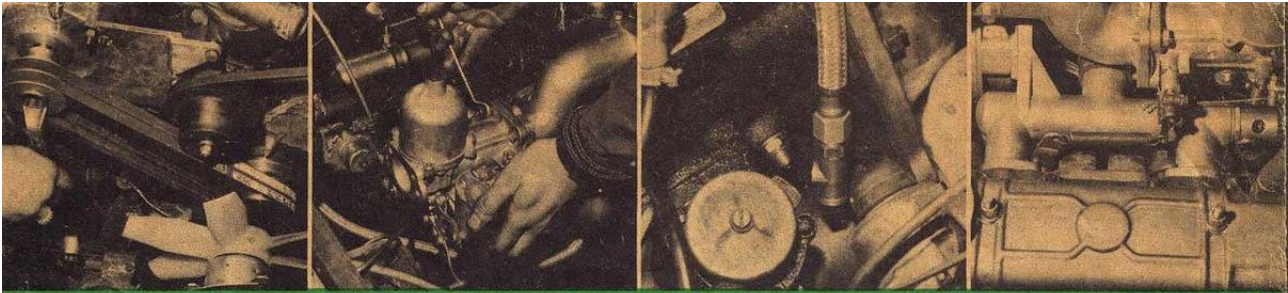
£99 10s. buys the biggest unit that fits the Cortina/Corsair. Other units cost on an average about £62 to £67, and provide great performance at low cost



Allards are well known in the Ford performance field, and as an alternative there is a twin-choke Weber conversion with a banana exhaust, without blower



Extra "Go" demands extra "Stop", which can be obtained with the brake booster on many models of car, or the disc-brake conversion available for Ford



Fit crank pulley, and special locking bolt. Put belts into place, then jockey the blower pulley into place. **DON'T** knock it on, as this can damage vanes

Fit the carburettor. It may be necessary to move the heater valve to do so. Cut the fuel pipe at an appropriate place, and connect up to the SU carb

There's an oil union that must be fitted to the blanking plug hole in the oil gallery. Oil can then feed the blower. Ignition advance is fitted with a sleeve

Fit choke and throttle cables, and then cut throttle spring to correct length, and fit on. Special hard plugs must then be fitted. Engine is then ready

gives plenty of smooth power

unit. The blower is quite quiet in operation, except for a very slight intake hiss.

What about insurance? Terrible tales have been told about the impossibility of this, but our experience is nothing to be alarmed about. Two members of our staff had their cars blown some time *before they joined us*, and for one it increased his total premium by £4, and the other paid a 25% increase.

On this Herald which I recently acquired the insurance company has just written to say that "they do not propose to require any increase in premium on the existing 3rd party, fire and theft policy".

The answer is, if you want to fit a blower, don't be put off by tales of insurance snags, but do find out beforehand. *In the final analysis it depends on your record, and you may well get off more lightly than you imagine.*

What About Fitting?

The Allard Motor Co. Ltd, 51 Upper Richmond Rd, Putney, London, S.W.15, are the world distributors of the Shorrock supercharger, and units can be fitted by them, or by the owner himself, or at his local garage. They also market special equipment.

Blowers are available for Anglia, Cortina, Mini, Sprite, Midget, A40, the 1100 range of cars, Herald and Spitfire, Viva, R8, and VW.

There are a few units left for 100E, A30/35, Minor series 2, Herald 948, VX 4/90 and Dauphine, at a special rate of £45.

The pic-strip above shows the main steps in fitting the unit, but a full instruction sheet is supplied with each one. Allard's prefer to call this unit a "pressure-charger", as it delivers the fuel/air mixture at a modest 5 to 7 lb. over atmosphere.

The actual effect of a Shorrock blower is to improve the induction efficiency of the engine by about 50 per cent, and this gives an increase in acceleration of about 50 per cent too.

Our experience with the Triumph is that it feels, for smoothness and performance, as if we had dropped a big six-cylinder engine into it. When driven in the same way as before the unit was fitted, fuel consumption can be the same (or just a little more) than before. Naturally, as with any performance equipment, hard use of the engine requires more fuel.

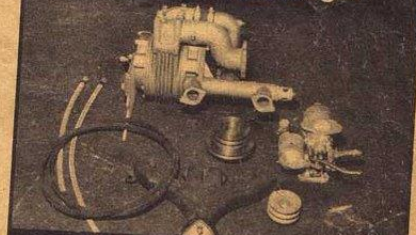
Tony Bostock

HERALD HOT-UP

Here is the car



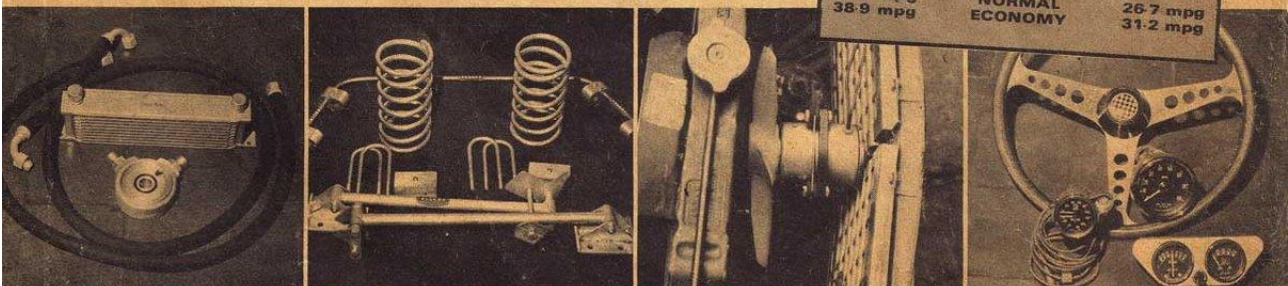
This is the supercharger



Here are the results

BEFORE	PERFORMANCE	AFTER
6.1 sec.	0-30 mph	4.2 sec.
10.8 sec.	0-40 mph	7.1 sec.
15 sec.	0-50 mph	8.9 sec.
26.5 sec.	0-60 mph	13.8 sec.
76.9 mph	MAXIMUM	94.6 mph
32.5 mpg	FUEL USE	
38.9 mpg	NORMAL ECONOMY	26.7 mpg
		31.2 mpg

YOUR CAR



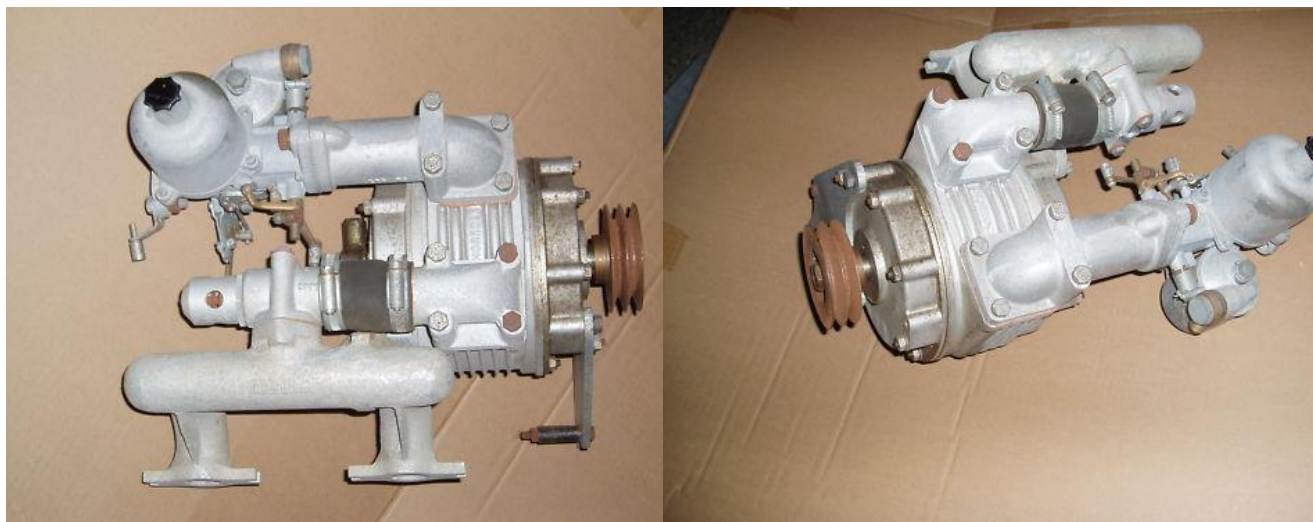
You won't need an oil cooler on your supercharged engine unless you intend taking part in auto-cross, sprints, or other sports activity. They cost £12 to £15

Solely for Ford there is a wide range of parts, including the anti-roll bar, spring lowering units, anti-tramp brackets and a host of interesting equipment

Our Herald was fitted with this Kenlowe thermomatic fan, thus engine power is saved, and the reduction in noise is considerable (seldom comes on in use)

For the pure enthusiast there is a wide range of parts such as: tachometer, instruments, a sports wheel, alternators, seat rests, seats, wide wheels, etc.

Nelle immagini seguenti il kit completo per i motori Triumph 1147 delle serie GA, GD ed FC con la flangia di fissaggio e la puleggia a doppia gola per le due cinghie di trazione.



Di seguito riportiamo la documentazione per chi volesse approfondire l'argomento o stesse già pensando alla installazione del compressore volumetrico Shorrock sulla propria Triumph.

SUPERCHARGER INSTALLATION
TRIUMPH HERALD

PRICE :

Including carburettor and all fittings.
No modification to engine.
FITTING EXTRA.

BOOST GAUGES AND OTHER ACCESSORIES CAN BE SUPPLIED AS OPTIONAL EXTRAS.

IT'S MAGIC!





SHORROCK SUPERCHARGERS LIMITED
Church Hill • WEDNESBURY • Staffs.
Telephone : WEDNESBURY 1764/5

MEMBER OF THE OWEN ORGANISATION
Printed in England

TRIUMPH HERALD

Supercharged by

SHORROCK

22 YEARS

OF RECORD BREAKING SUCCESS

SHORROCK SUPERCHARGERS LTD. have been chosen for supercharging engines, now holding over 65% of the fastest-ever world class record attempts.

In 1939 Goldie Gardner's M.G. was the first car in the world, in Class G, to exceed 200 m.p.h.—supercharged by Shorrock.

Stirling Moss broke five International Class F records (1957) in the 1½ litre M.G. including the Flying Km at 245.64 m.p.h.—again Shorrock supercharged.



More recently, Phil Hill captured 6 new International Class E records with a supercharged M.G., including the Flying Mile at 254.53 m.p.h.—Shorrock again.



The Austin Healey Sprite driven by T. H. Wisdom, Ed. Leavens, and Gus Ehrman also put up a fantastic performance in Class G, smashing 15 international records and 52 American records—top speed 145.56 m.p.h. and 12 hour endurance at 138.75 m.p.h.

The Sprite was fitted with an "off-the-shelf" Shorrock supercharger, the same that can be fitted to the TRIUMPH HERALD.

These records establish Shorrock as the first and only name in superchargers with a wealth of experience that has led to the perfecting of superchargers for the normal everyday car.



THE FIRST NAME IN SUPERCHARGERS

SUPERCHARGER INSTALLATION TRIUMPH HERALD

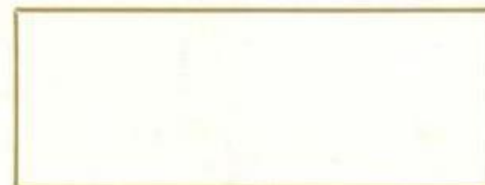
PRICE :

Including carburettor and all fittings.

No modification to engine.

FITTING EXTRA.

BOOST GAUGES AND OTHER ACCESSORIES CAN BE SUPPLIED AS OPTIONAL EXTRAS.



SHORROCK SUPERCHARGERS LIMITED
Church Hill • WEDNESBURY • Staffs.

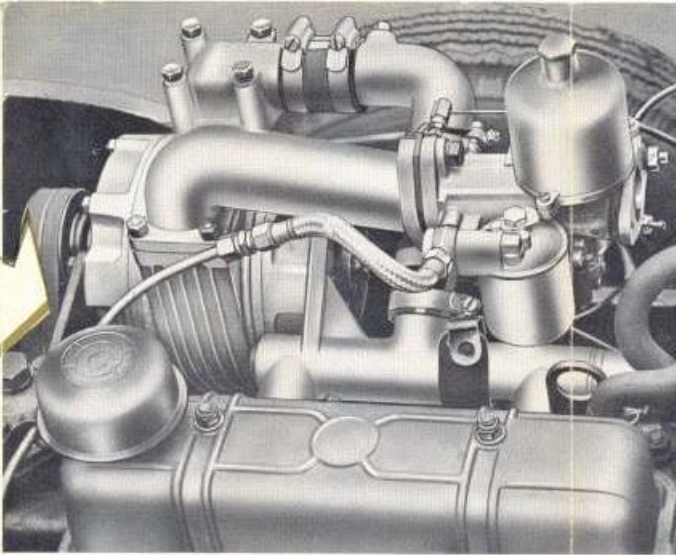
Telephone : WEDNESBURY 1764/5

MEMBER OF THE OWEN ORGANISATION
Printed in England


NEW MOTORWAYS
will need

SHORROCK
PERFORMANCE



Speed, acceleration and instant response to all demands on an engine is the dream of every medium car owner. Shorrock have made that dream come true. Shorrock Superchargers impart as much as 50% MORE POWER to the TRIUMPH HERALD, giving an overall performance which is almost unbelievable.



Shorrock literally trans

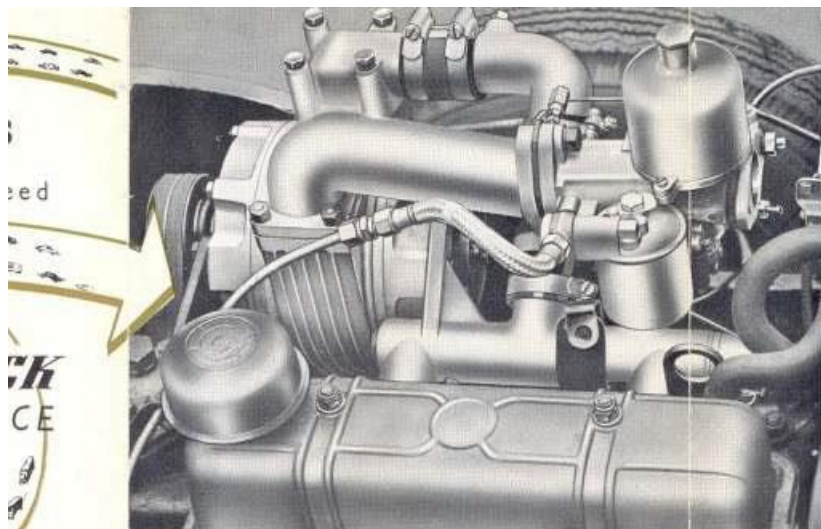


- ★ Up to 50% more Power.
- ★ Improved Engine Flexibility.
- ★ Quicker off-the-Mark Speed.
- ★ Vastly Improved Acceleration.
- ★ More Hills in Top.
- ★ Less Gear Changing.
- ★ Walking Speed in Top Gear.
- ★ Higher Speeds.

PERFORMANCE PLUS!!... with S

M.P.I
0-3
0-4
0-5
0-6
0-7
30-5
40-6
50-7
Over
Fuel
Maxi
indici
The
Tech



Shorrock supercharger installation in the Triumph Herald gives a neat appearance and does not impair accessibility to any part of the engine.



Shorrock literally transforms the Herald !

- ★ Up to 50% more Power.
- ★ Improved Engine Flexibility.
- ★ Quicker off-the-Mark Speed.
- ★ Vastly Improved Acceleration.
- ★ More Hills in Top.
- ★ Less Gear Changing.
- ★ Walking Speed in Top Gear.
- ★ Higher Speeds.



PERFORMANCE FIGURES

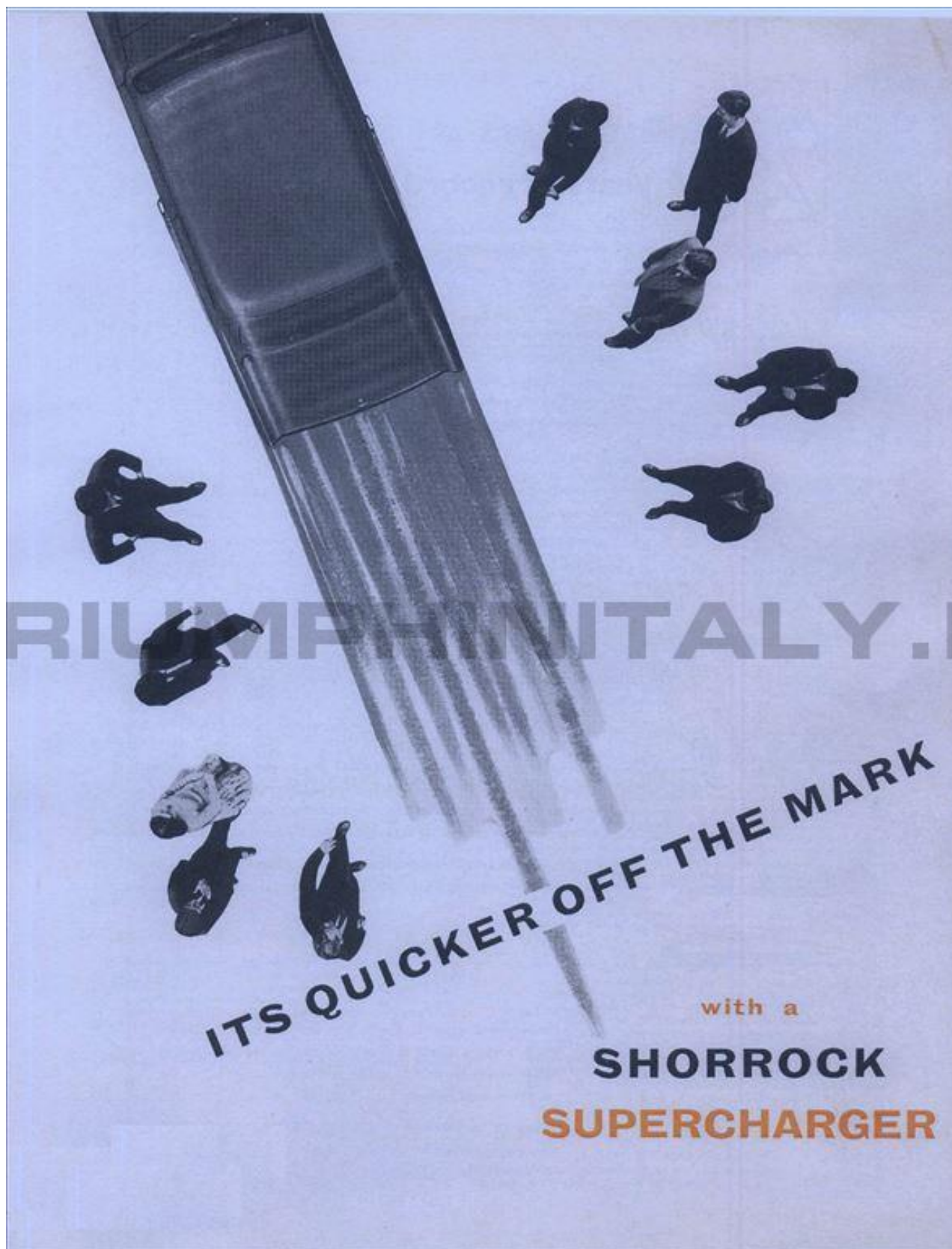
TRIUMPH HERALD COUPE

M.P.H.	Un-supercharged	Supercharged
Acceleration through the gears		
0—30	6.1 secs.	4.2 secs.
0—40	10.5 secs.	6.3 secs.
0—50	16.0 secs.	10.6 secs.
0—60	25.5 secs.	14.2 secs.
0—70	43.8 secs.	21.8 secs.
Acceleration in Top Gear		
30—50	15.9 secs.	9.8 secs.
40—60	21.0 secs.	10.6 secs.
50—70	30.6 secs.	11.8 secs.

Overall
Fuel Consumption: 30.1 m.p.g. 29.0 m.p.g.
Maximum
indicated speed 79.5 m.p.h. 94 m.p.h.

The unsupercharged figures are obtained from Technical Press Test Report.

ANCE PLUS!!... with SHORROCK



over **20** years of record breaking success . . .

Shorrock have the distinction of being chosen for supercharging engines holding over 60% of the total "fastest-ever" world class record attempts.

1937



As early as 1937, Shorrock Superchargers have been fitted to small cars, the M.G. range in particular. Subsequent world records by this famous car were achieved with a Shorrock supercharged engine. The most noteworthy was in May, 1939, when the M.G., then driven by the late Lt.-Col. A. T. ("Goldie") Gardner, at Dessau, Germany, was the first car in the world, in Class G, to exceed 200 m.p.h.

1957



Shorrock are also proud to have been associated with the fabulous success of the 1½ litre supercharged M.G. Ex. 181.

Fitted with a supercharger specially developed from a standard unit the "M.G. Special," driven by Stirling Moss at Utah, broke five International Class F records, including the flying kilometre at 245.64 m.p.h.

Again, in the same month, the B.M.C. Development Project Ex. 179 with co-drivers Tommy Wisdom and David Ash, captured six International Class G records with a blown engine. These records included driving for six hours at an average speed of 132.3 m.p.h., and the 1,000 Km. at 131.84 m.p.h.

1959



In 1959 Shorrock were proud to be associated with the phenomenal success of the Austin Healey Sprite. Driven by T. H. Wisdom, Ed Leavens, and Gus Ehrman, it put up a fantastic performance in Class G smashing 15 International records and 52 American records—maximum speed 145.56 m.p.h. and 12-hour endurance at 138.75 m.p.h.

In the same month Phil Hill captured 6 new International Class E records in the supercharged M.G. 181 including the Flying Mile at 254.53 m.p.h.—Shorrock Supercharged again.

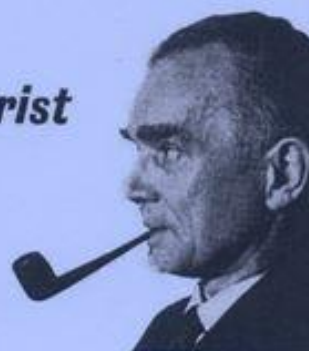
today . .

These records establish Shorrock as the first name in Superchargers with a wealth of experience that has led to perfecting superchargers not only for racing and record attempts, but for you the average motorist.

Backed by the immense resources of the Owen Organisation, with whom they are associated, Shorrock produce superchargers for most makes of modern cars.



Mr. Shorrock and The Everyday Motorist



What actually is supercharging?

The function of a supercharger is to allow a larger quantity, by weight of petrol-air mixture to be fed to the engine than could be induced in the normal way.

In other words, the engine receives its input of air at a pressure higher than atmospheric pressure, which is virtually equivalent to increasing the swept volume of the engine.

Thus, an engine of 1,500 c.c. capacity supercharged at a pressure of 5 lbs./sq. in., has the same effective capacity as an engine of 2,000 c.c. swept volume, since it is receiving its charge at atmospheric pressure (14.74 lbs./sq. in.), plus 5 lbs./sq. in. or at approximately one-third greater pressure.

To obtain the fullest benefit, it is necessary to employ a supercharger which in itself will operate efficiently over a wide speed range with the minimum absorption of power.

It is to this end that the SHORROCK supercharger was designed.

I always thought supercharging was for racing cars only?

I agree that in the past supercharging has been associated in the minds of the public with racing cars. In fact, many enthusiasts have fitted SHORROCK to their cars for sprint trials and long distance events with outstanding results. Many world records have been achieved with cars supercharged by SHORROCK. Our experience over the years has largely been built up by stringent tests on the race track. All this experience, however, has been of immense value to perfect superchargers which can be used safely, efficiently and economically by the general motoring public.

Why are they not offered as optional equipment by the motor manufacturer?

All cars are produced with engines of specified basic ratings and a supercharger is considered to be an extra appliance for boosting the engine by pressure induction.

For the motorists who want to enjoy the benefits of extra power and performance, particularly with the smaller car, most car manufacturers recommend them to SHORROCK.

In our opinion, the many advantages now proved by supercharging should lead to even greater popularity in the future, which may induce motor manufacturers themselves to offer the appliance as an "optional," or at least allow for its installation in the basic design of their engine layout.

In what way does it improve performance?

The SHORROCK installation provides substantially more power (up to 50%). It gives improved engine flexibility which means less gear changing at all times. Many more hills can be taken "in top" and all at higher speeds if necessary. Snappier "off-the-mark" acceleration is obtained and the increased power considerably raises the average cruising speed.

What about fuel consumption, and do I need special grades?

If a supercharged car is driven normally, that is without taking advantage of the extra power for increased speed and top gear performance, then fuel consumption is not affected and in some instances is often reduced. By using the supercharger to its full effect, however, a slight increase in fuel consumption is only to be expected. This varies from 10%—15%. Measuring performance and economy, however, against bigger cars of higher basic rating, this slight increase is comparatively negligible. Standard premium grade fuels are entirely suitable.

Will fitting a supercharger impair the basic engine?

On the contrary, low pressure charging as used by SHORROCK apart from increasing thermal efficiency has been proved to prolong the life of exhaust valves and also to reduce cylinder wear. All cylinders operate with a mixture of equal strength. This even distribution gives a longer life to the engine and prevents local mixture starvation to any one cylinder, often a cause of inadequate lubrication on starting is also a common cause of bore wear. The SHORROCK supercharger supplies all cylinders with a surplus of oil collected in the casing upon starting which provides upper cylinder lubrication when it is most needed.

Should I need a higher back axle ratio?

For normal use, the average back axle and gear ratios are quite satisfactory. For competition work, it may in some cases be desirable to modify the axle ratio.

I thought superchargers were noisy?

The noise often associated with superchargers can be caused by pressure differences at the discharge port. The SHORROCK vane type compressor has the advantage of reducing noise, the charge being compressed internally and there is no back flow of air when the port is uncovered. Pulsations are reduced to a minimum and by fitting a normal type of air cleaner, the operation is virtually noiseless at all speeds.

I believe they are good for high altitudes?

Indeed, yes. Supercharging is the only means of compensating for the loss of power inevitable with lowered air density. Quite a feature, particularly for Continental touring and, of course, for the export market generally.

Will the supercharger fit any car, and are any modifications necessary?

The SHORROCK "blower" can be fitted to most cars where the engine layout provides the necessary room. We publish a list of current cars suitable for the SHORROCK installation. For older cars, we will gladly advise as to suitability.

No modification is necessary to the engine. The complete installation can be fitted in approximately half-a-day. A new carburettor, however, is necessary which, together with manifold pipes, fitting brackets, pulleys and belts, is supplied inclusive with the Supercharger. Installation may be effected quite easily by any competent garage or owner-driver. Your existing petrol pump, too, is quite adequate. We recommend that standard "touring" plugs be replaced by plugs of the "sports" type.

Finally, should you change your car, the Supercharger can be transferred, providing the engines are of reasonably similar capacities.

Is a supercharger worth the outlay?

If you mean the SHORROCK, yes. It's a precision engineered job backed by twenty years of research in the Supercharger field and proved under the most exacting trials. We are, of course, associated with the Rubery Owen Organisation and with them enjoy the closest relationships with the whole of the Motor Industry. You, however, are the motorist and the expense of a Supercharger is for you to consider. The joy of owning and driving a SHORROCK supercharged car approaching the performance of some of the big boys has to be experienced to be believed. The relative expenditure on a supercharger as against the price difference in the larger car is surely the factor to be considered.

Thanks a lot, Mr. Shorrock. I see now that your blower concerns the ordinary motorist like me, not only the enthusiast. You've supercharged me alright—I'll be seeing you again.

Pressure-Charging I.C. Engines

... some basic principles and advantages

It will no doubt be of interest to those people wishing to improve the all round performance and flexibility of their cars, whether large or small horse power to gain some small insight into the principles involved in "Pressure Charging" as this system is called when applied to the everyday motor car, or "Supercharging," when applied to obtain the absolute maximum output in the case of a racing car.

In an internal combustion engine the amount of power developed is in direct proportion to the weight of fuel consumed in a given time, the fuel being mixed with the correct volume of air to ensure its complete combustion in the engine.

With a "normally aspirated" engine, that is one which is not supercharged, the power is limited to the amount of air that can be sucked into the cylinders on the induction stroke, as this determines the weight of fuel that can be burnt with it.

The piston on its downward stroke (i.e., the induction stroke) creates a partial vacuum in the induction pipe which causes air to be drawn through the carburettor to the cylinder, collecting on its way through the carburettor the correct amount of fuel.

However, if the piston were to remain stationary at the bottom of its stroke, the cylinder would only then fill with mixture, but unfortunately as under working conditions there is only a fraction of a second for this operation to take place, the cylinder is at best only partially filled with the petrol-air mixture.

It is to overcome these inherent limitations in the normally (or atmospherically) aspirated engine that pressure charging is employed. An engine equipped with the Shorrock pressure induction system is free from the foregoing disadvantages, in fact it gives much improved power, flexibility, acceleration and 'top gear' performance.

With the SHORROCK-Supercharged engine operating at a maximum boost pressure of 5 lbs./sq. in., air is drawn through the carburettor into a compressor, the capacity of which is so arranged that it draws a volume of air equal to the FULL SWEEP VOLUME (or capacity) of the engine PLUS ONE-THIRD.

Since the compressor is positively driven from the engine crankshaft, no matter what the engine speed, the induction pipe is full of the correct air-petrol mixture UNDER PRESSURE, thus ensuring a perfectly steady flow into the cylinders which results in remarkable flexibility at all engine speeds enabling the car to be driven at walking speed in top gear.

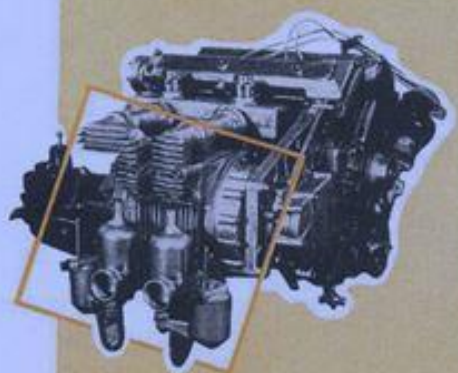
Since the cylinders receive their full volume, plus one third from the compressor, the power output of the engine is increased proportionately, i.e., 33% at least. Pressure charging has not been more universally adopted in the past, as it is only comparatively recently that a compressor suitable for this application has been available. To meet the requirements of the modern car it is essential that the compressor should be quiet in operation and be as reliable as any other part of the engine.

Supercharging has, of course, been employed for a number of years in connection with racing cars where requirements are somewhat different from the ordinary pleasure car.

With the racing car it is generally a question of obtaining the maximum amount of power possible at "full throttle"—increased power and flexibility at lower speeds being of little comparative consequence and as such, in designing superchargers for these conditions no particular attention was given to obtain high efficiency at low engine speed.

In the past, to obtain even moderate results at the "bottom end" of the ordinary car, a supercharger had to be employed which gave too high a boost at maximum speeds causing troubles and annoyances such as burnt plugs and exhaust valves, blown cylinder head gaskets, etc.

The present Shorrock supercharger with many exclusive features in its design, is eminently suitable for pressure charging the normal car in addition to the supercharging of racing cars, having been proved in both spheres to be a unit of remarkable efficiency.

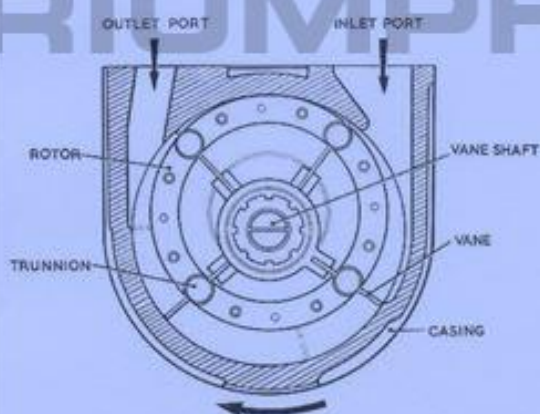
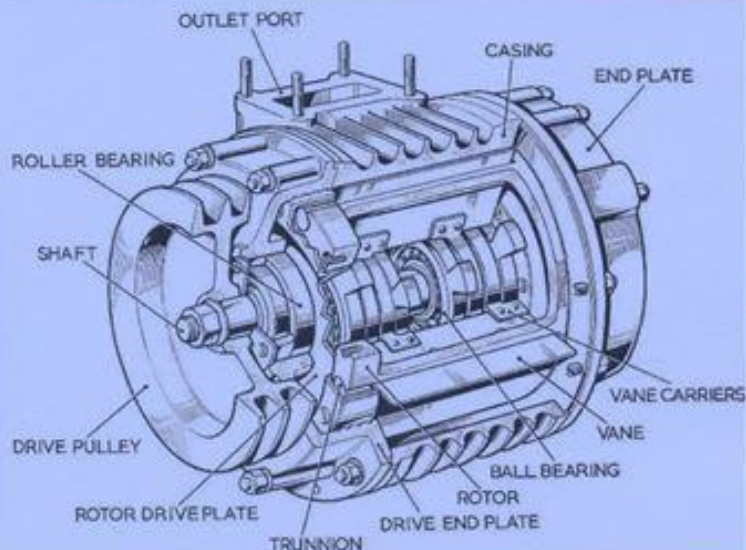
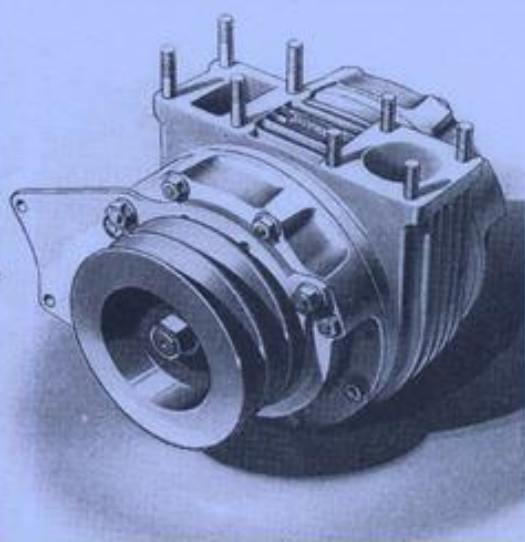


Shorrock Superchargers are the outcome of many years experience in the design of high efficiency compressors, which has resulted in the production of a range of superchargers with remarkably high adiabatic efficiency, low power absorption and which operate with a complete absence of mechanical noise.

The characteristics of these superchargers make them eminently suitable, not only for cars, but for road transport vehicles of all types propelled by either petrol or compression ignition engines and for powered water craft. In the industrial field also, Shorrock compressors and exhausters have universal application.

The high volumetric efficiency throughout the speed range enables maximum torque and power to be obtained. Another feature of the "Shorrock" is the possibility of using high boost pressures without using multi-stage compression. The complete range of superchargers covers engine requirements from 850 c.c. to 10 litres depending upon boost pressures required and operating speed. The lubrication system has received particular attention and is fully automatic.

PRINCIPLES OF THE SHORROCK SUPERCHARGER



The Shorrock Supercharger is a positive displacement eccentric-drum-type compressor employing four vanes.

The vanes are mounted radially to the compressor casing, each vane being carried by two ball journals mounted on a shaft of ample dimensions concentric with the outer casing.

The vanes are impelled by the internal rotor which is mounted eccentrically to the outer casing and through which the vanes pass.

The angular motion of the vanes relative to the rotor is accommodated by specially designed trunnions.

This construction makes practical the very fine clearances necessary for high efficiencies, since the vanes being mounted radially to the casing and anchored by the vane shaft cannot come into direct contact with the casing and can be run at very high speeds.

The four vanes passing through the rotor and having such very fine clearances between their extremities and the casing and end plates, virtually sub-divide the crescent shaped chamber into four separate chambers. The inlet port of the supercharger is so positioned that as one of the chambers receives its full volume of air, the adjacent chamber (on the inlet side of the unit) is increasing in volume and creating a vacuum at the inlet port.

Immediately the vanes have reached the position where the chamber between them contains the maximum volume, the volume between the vanes diminishes as the space between the rotor and the casing becomes less, thus compressing the charge within the supercharger itself before releasing it through the outlet port into the engine manifold.

Lubrication is fully automatic and only a very small quantity of lubricant is required for the supercharger to function with complete reliability.

The supercharger is preferably mounted on the inlet manifold side of the engine and driven by twin vee-belts from the front end of the crankshaft, the installation design being such that it can confidently be carried out by any competent garage mechanic or owner-driver.

In order to meet special requirements for a Pressure Gauge to be used with our supercharger installations, we have available the gauge as illustrated. It incorporates both positive boost pressure readings and also negative pressures or vacuum readings. This gauge incorporates a damping device which ensures steady non-fluctuating readings to be obtained under all conditions.

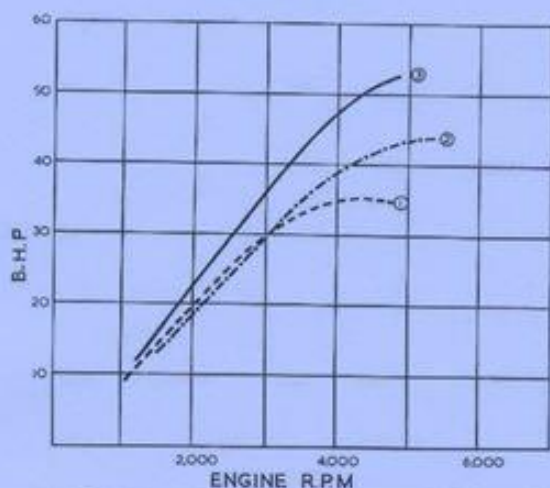
The standard calibrations read 0-12 lbs. per square inch on both pressure scales. The diameter of the gauge is 2in. which matches existing instruments and is supplied with clamp fittings and connecting unions.

performance plus . . . at all speeds . . .

COMPARATIVE PERFORMANCE FIGURES

B.M.C. '950' A TYPE ENGINE
(as fitted to Morris Minor 1000)

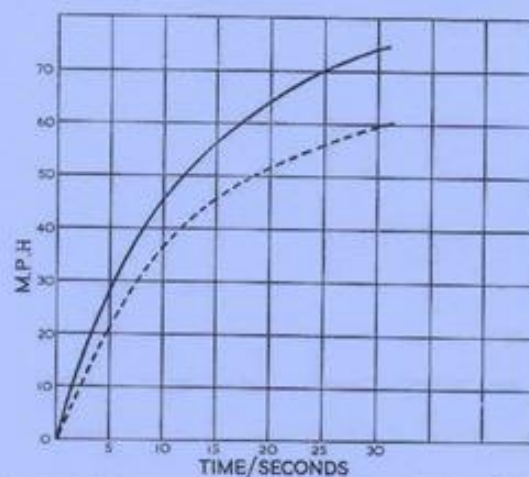
POWER CURVES



Curve (1) — Standard Engine
Curve (2) — Twin carbs and H.C. head
Curve (3) — SHORROCK SUPERCHARGED

MORRIS MINOR 1000

ACCELERATION THROUGH THE GEARS

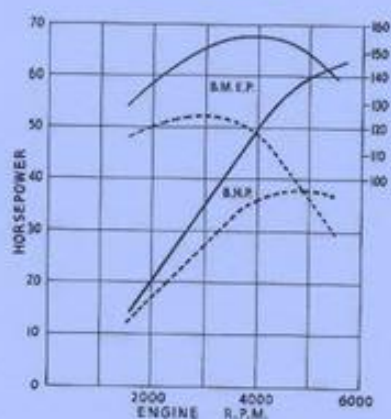


MAXIMUM SPEEDS

Standard Engine 72.4 m.p.h.
SHORROCK SUPERCHARGED 86 m.p.h.

FORD 105E ENGINE
(as fitted to New Ford Anglia)

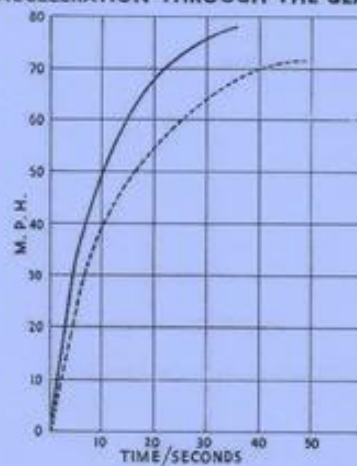
POWER CURVES



--- Standard Engine
— SHORROCK SUPERCHARGED

NEW FORD ANGLIA

ACCELERATION THROUGH THE GEARS

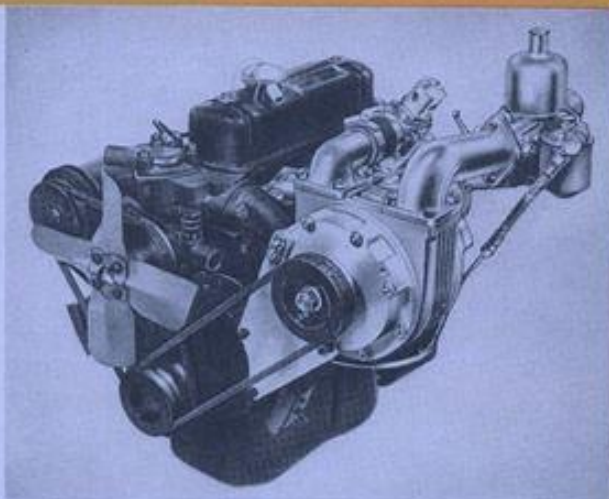


MAXIMUM SPEEDS

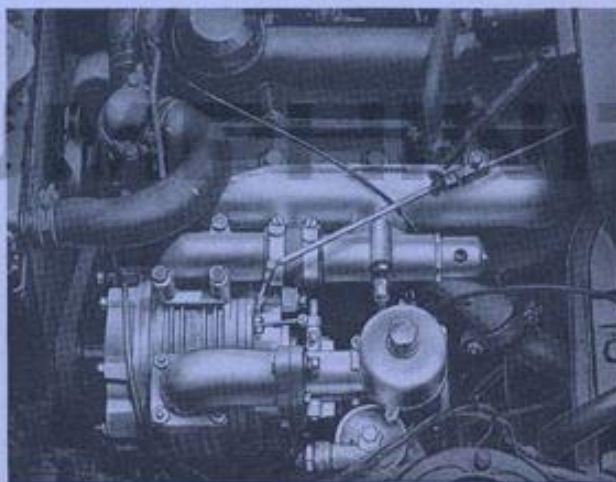
Standard Engine 73.8 m.p.h.
SHORROCK SUPERCHARGED 91.4 m.p.h.

. . . compact installation

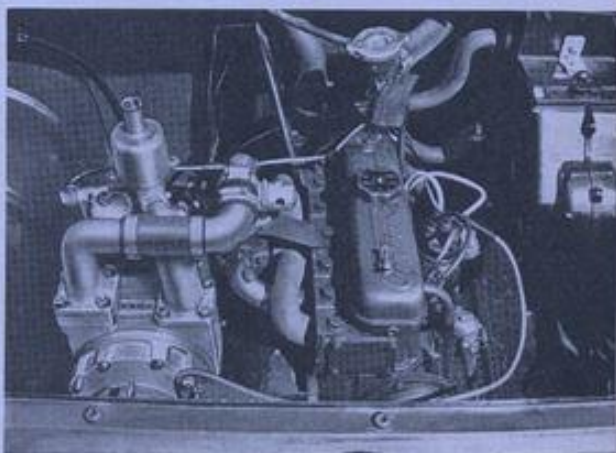
A Shorrock supercharger fitted to an exhibition AUSTIN "A" series engine shows off its neat appearance and how easily it can be fitted.



The Shorrock supercharger installation in the FORD ANGLIA gives a compact appearance and does not impair accessibility to any part of the engine.



A neat looking appearance, accessibility to any part of the engine unimpaired that's the Shorrock supercharger fitted in the RENAULT DAUPHINE.



SHORROCK

SUPERCHARGER INSTALLATIONS

A range of superchargers are available for most engines and we are always pleased to advise in the suitability of any supercharger within our range for a particular engine and to quote for supercharger and speed equipment work at these premises.

Detailed fitting instructions are supplied with every installation. Boost gauges and other accessories can be supplied as optional extras.

HIRE PURCHASE TERMS AVAILABLE

B.M.C. RANGE

Superchargers for the B.M.C. range of vehicles are distributed throughout the world by The Donald Healey Motor Co. Ltd., The Cape, Warwick, England. *All orders and enquiries to be addressed to us direct until further notice.*

FORD RANGE

Superchargers for the Ford range of vehicles are distributed throughout the world by The Allard Motor Co. Ltd., Supercharger Division, 51 Upper Richmond Street, Putney, London, S.W.15, England.

AUTOMOBILE ENGINEERS' REFERENCE BOOK

Section 8 of this book which is entitled "Supercharging" was contributed by our Mr. Christopher Shorrock, Technical Director of the Company.

This section, fully illustrated, covers supercharging in all its aspects and is a mine of valuable information for all those interested in this subject. *Copies may be obtained from this company price 2/6d. postage paid in this country. remittance to be sent with order.*

BOATS

We also fit superchargers to power boats with the same fantastic results that we achieve on the modern car.

Write for details.

SHORROCK GIVES YOU THAT **BIG** CAR PERFORMANCE

★ *Up to 50% more power*

★ *Improved engine flexibility*

★ *Quicker off the mark*

★ *Vastly improved acceleration*

★ *More hills in top*

★ *Less Gear Changing*

★ *Higher speeds*

★ *Faster Cruising*

THESE FEATURES OF SHORROCK SUPERCHARGING ARE ALL
IMPORTANT FACTORS IN THESE DAYS OF CROWDED ROADS
AND WITH THE INNOVATION OF NEW MOTORWAYS



for performance



DESIGN AND
DEVELOPMENT OF
COMPRESSORS,
EXHAUSTERS,
SUPERCHARGERS,
I.C. ENGINES,
AND
EQUIPMENT FOR
THE MOTOR
INDUSTRY

SHORROCK SUPERCHARGERS LTD.

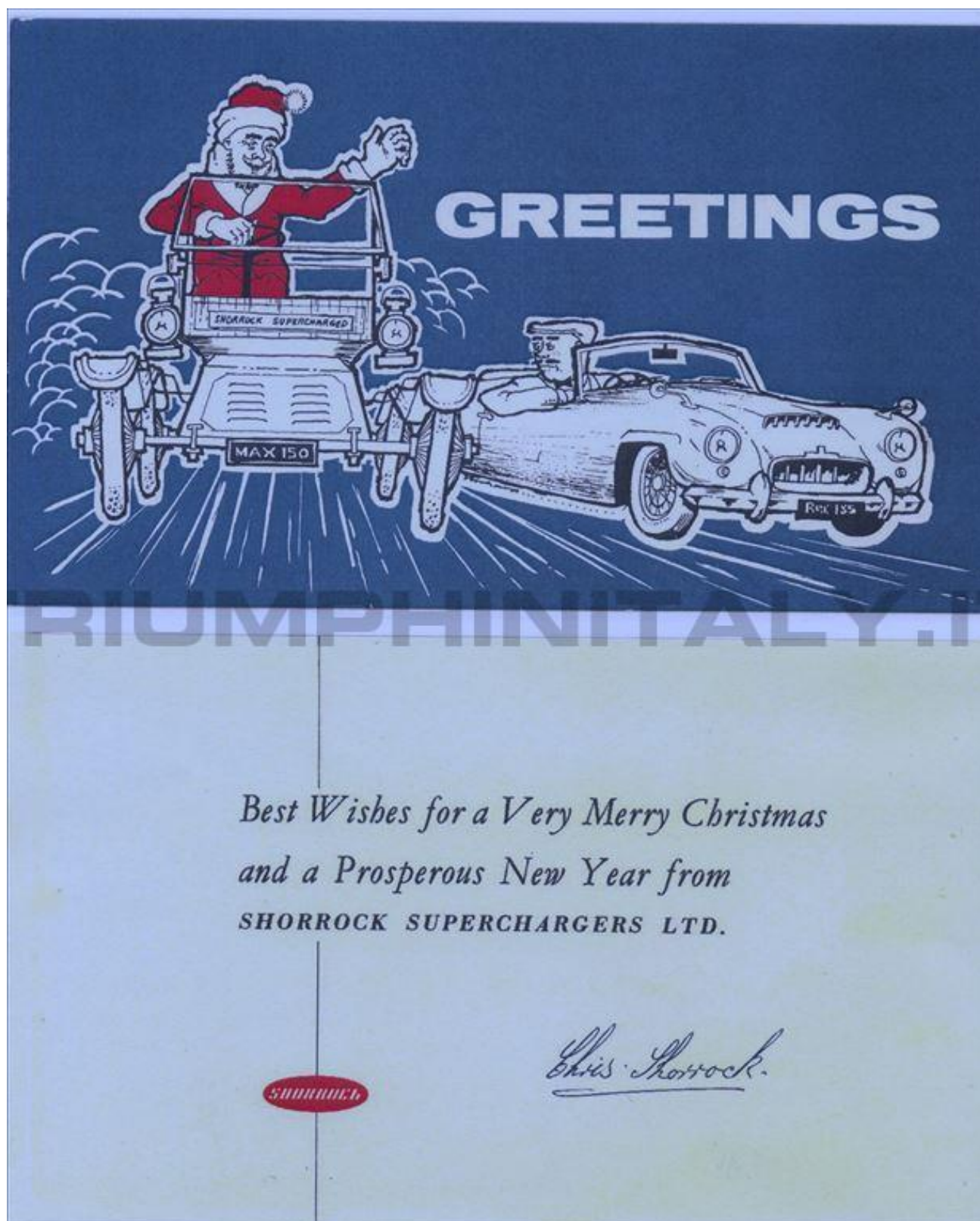
CHURCH HILL, WEDNESBURY, STAFFORDSHIRE, ENGLAND

Telephone : Wednesbury 1764/5

Telegrams : 'Shorrock, Wednesbury'

Member of the Owen Organisation

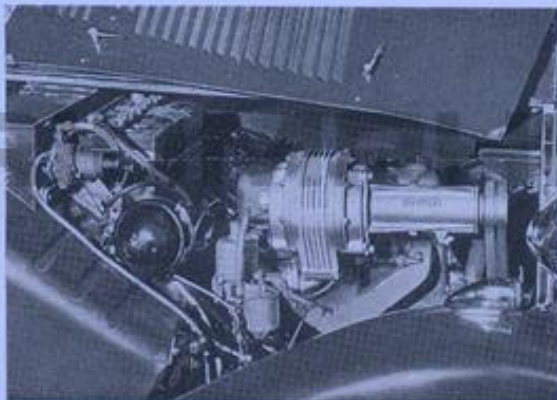
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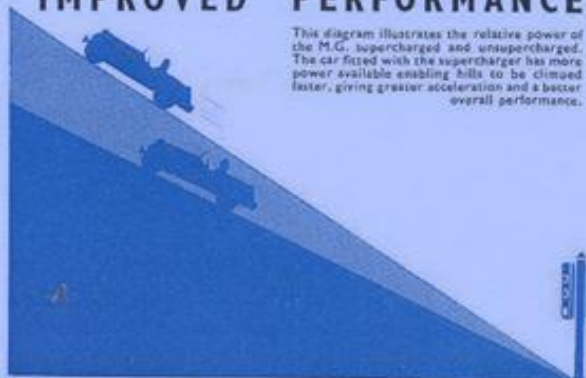
SHORROCK

Supercharging for faster Motoring

This photograph shows the neat and compact installation of the Shorrock Supercharger on the M.G. car.



IMPROVED PERFORMANCE



This diagram illustrates the relative power of the M.G. supercharged and unsupercharged. The car fitted with the supercharger has more power available enabling hills to be climbed faster, giving greater acceleration and a better overall performance.

You benefit by

Improved flexibility

which means less gear changing at all times. Many more hills can be taken "in top," and all at higher speeds if desired.

Snappier acceleration

The substantially increased power gives rapid off-the-mark acceleration to reach high cruising speeds with the minimum of delay.

Higher average cruising speed

Without the necessity of raising the car's normal top speed, the much increased power will raise considerably the M.G.'s average cruising speed.

There are also Shorrock Supercharger installations for other cars.

Distributed in the United States of America by

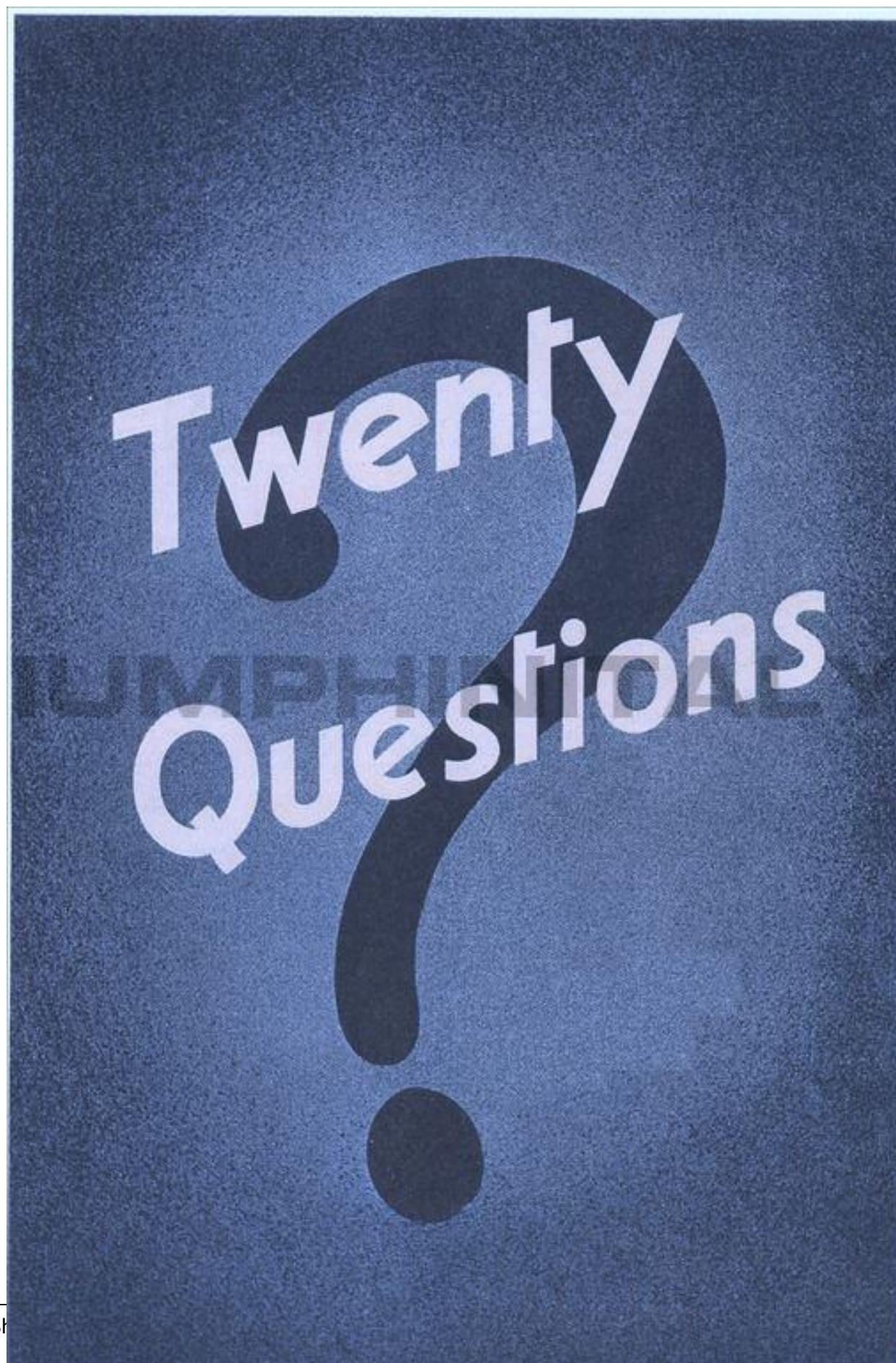
Autocessories, Ltd.

WARSAW, INDIANA, U.S.A.

PRINTED IN ENGLAND

SPS/3000/9/52

SHORROCK SUPERCHARGERS LTD COVENTRY ENGLAND



Your Questions Answered

SUPERCHARGING

is the supply of mixture to the cylinders under even, forced pressure, instead of atmospheric pressure.

DESIGN

1. What is the Shorrock Super-charger?

It is a positive displacement eccentric drum vane type compressor.

NOISE

2. Is it noisy?

No, it is almost inaudible at all speeds.

PERFORMANCE

3. Is it in operation all the time, and how will this benefit my car's performance?
4. Is it practical for everyday use?

Yes, it is in operation at all speeds giving additional power, improved acceleration, better hill climbing and top gear performance.

Yes, by giving much greater flexibility it increases the ease and pleasure of driving in traffic and at speed on the open road.

POWER AND BOOST

5. What is the maximum increase in power and the maximum boost pressure?

The increased B.H.P. available varies between 30% to 50%, depending upon the type of engine. This increase is obtained with 6-7 lbs boost.

STARTING

6. How does supercharging affect starting?

Normally an improvement is effected.

ALTITUDE

7. Is supercharging an advantage at high altitudes?

Supercharging compensates for the loss of power inevitable with lowered air density.

FUELS AND CONSUMPTION

8. Does supercharging call for special fuels, and how is consumption affected?

Ordinary standard fuel is suitable and consumption increase is only 10%—15%, which gives a performance—economy figure in favour of the supercharged car.

LUBRICATION

9. How is it lubricated, and what is the oil consumption?

It is pressure fed from the engine's lubrication system, and does approximately 3,000 miles to a gallon of oil.



DOES IT GIVE MORE POWER?



IS IT NOISY?



AND OWNED THE SHORROCK SUPERCHARGER DUE TO MY NEW CAR PLEASE

by DRIVE
SHORROCK
SUPERCHARGERS LTD.

INTERCHANG-ABILITY

10. Can the super-charger be transferred from car to car?

Yes, if the engines are of similar capacities—consult our distributors who will gladly advise you.

INSTALLATION

11. Is it difficult to instal, and is everything necessary supplied with the kit?

The complete installation may be fitted in approximately half-a-day and everything is supplied including carburettor, manifold pipes, fitting brackets, pulleys and belts.

RELIABILITY

12. Does supercharging impair in anyway the life or reliability of the car's engine or chassis?
13. Should the car be run in before fitting a supercharger?
14. Is trouble with cylinder head gaskets to be expected?

No, not with normal driving.

This is advisable but not essential.

With the boost pressures normally employed no trouble should be experienced.

MODIFICATIONS

15. Is it necessary to adjust or alter the valve timing in any way?
16. Should the ignition system be altered or adjusted?
17. Is a new carburettor or petrol pump required?

No.

The standard distributor provides all adjustments necessary. Standard "touring" plugs should be replaced by plugs of the "sports" type.

A new carburettor is necessary, and this is supplied with the supercharger. The present petrol pump is quite adequate as very little extra fuel is used.

18. Does the exhaust or cooling system require any modification?
19. Should a higher back axle ratio be used?

None whatsoever, these are both satisfactory.

For normal work the average axle and gear ratios are quite satisfactory. For competition work it may in some cases be desirable to modify the axle ratio.

20. How is the supercharger driven?

By multiple vee belts from the crank shaft pulley. Belts have life of 15,000 miles approximately.

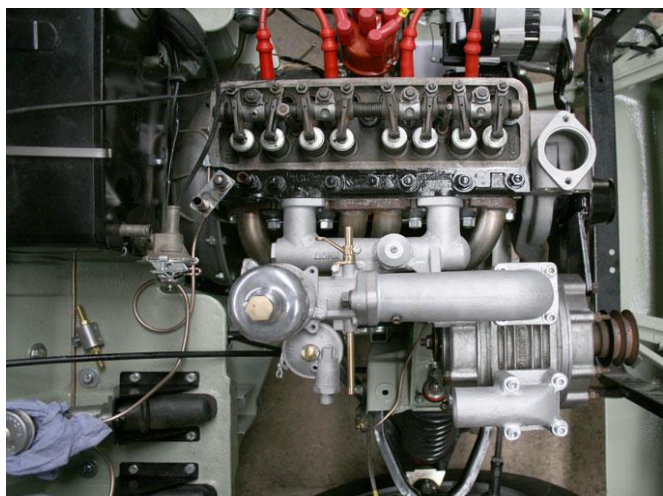
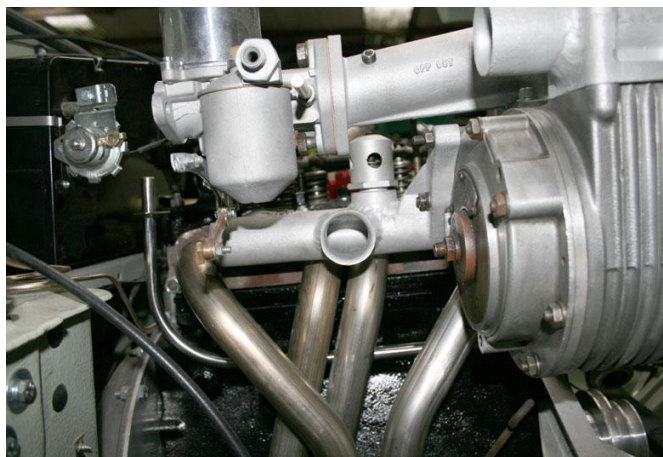


I'M JUST GOING TO FIT THE SHORROCK

Ed ecco come si presenta un motore Herald Coupé allestito con lo Shorrock in fase di preparazione



Shorrock supercharger, ovvero “ingozza l’oca”



Motori ritrovati: a volte capita anche di ritrovare un motore dimenticato con tanto di compressore, come in questo caso.

