Every endeavour has been made to ensure that the information contained in this book is correct at the date of publication, but due to continuous developments, Perkins Engines Ltd., reserve the right to alter the contents without notice.

handbook for V8.540 and V8.510 diesel engines

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In addition to the above, there are Perkins Distributors in the majority of countries throughout the world. For further details, apply to Perkins Engines Limited, Peterborough, or to one of the above companies.

index

PERKINS PARTS
for
PERKINS PRODUCTS

To ensure you obtain the best results from your engine and to safeguard your own guarantee, fit only genuine Perkins Parts. These are readily obtainable throughout the world.

introduction

This handbook has been written to assist the owner/operator in the correct starting and maintenance procedure he should use so that his engine can give him continued reliability until repairs or replacement parts become necessary, due to normal wearing of the engine component parts.

Over many years, it has been our experience that owners who conform to the maintenance periods listed in our Service Publications and to the recommended procedures, are those who obtain the best service from their engine.

We have also found that a majority of complaints raised against our engines have been associated with bad maintenance, in particular, with lack of attention to the LUBRICATING OIL CHANGE, the FUEL AND OIL FILTERS and the AIR CLEANER. Should you consider you are working in unusually dusty or heavy, arduous conditions then you should carry out the preventive maintenance more often than is indicated in this handbook. We cannot stress enough the importance of KEEPING YOUR ENGINE CLEAN INSIDE as well as outside.

For engines fitted with DRY TYPE AIR CLEANERS, there are devices known as RESTRICTION INDICATORS which can be fitted to the induction system to indicate that the air cleaner element needs attention, and it is suggested that you have one fitted to your engine to warn you of the necessity to CLEAN your AIR CLEANER.

Repairs or adjustments to your engine should be carried out by a trained engineer whose services are usually available at the supplier of the vehicle or machine.

Spare parts, service, advice as well as the benefit of a Perkins trained engineer is available at our Overseas Companies and Distributors.

Workshop Manuals are also available from the same sources for a reasonable charge.

The ANCILLARY equipment fitted to the engine will vary in accordance with the type of application to which it is fitted.

Repairs or replacements for parts, or any problems concerned with the ancillary equipment can be dealt with by the supplier of the vehicle or plant. If this is not possible, you should contact your nearest U.K. Distributor or Overseas Distributor for assistance.

engine identification

The types of engine covered by this handbook are basically of the same construction. The V8.540 engine may be fitted with a small rotary type fuel injection pump or a larger in-line pump. The in-line pump is fitted to all V8.510 engines. The engine type can be verified by checking the engine number as shown below.

The engine number is stamped on the top of the inside forward end of the right hand bank of the cylinder block (see item 1, page 10) and this number should be quoted in full, together with the type of vehicle or machine in which it is fitted, when requesting information or ordering parts.

On earlier engines, the number consisted of figures and letters, e.g. 540U2052. The first three figures represent the cubic capacity, i.e. 540 in³ (V8.540 engine), the letter "U" signifies that the engine was built in the United Kingdom and the last group of figures comprises the engine serial number. Other letters may be included in this combination denoting specific information and the full number should be quoted in cases.

With current engines, the engine number consists of up to fifteen letters and numbers, details of which are given on next page.

new engine numbering system

A new system of engine identification is being introduced into the various Manufacturing Operations throughout the world within the Perkins Group of Companies.

This new number consists of up to fifteen letters and numbers which represent:—

Engine Family
Engine Type and Phase
Parts List
Country of Origin
Production Serial Number
Year of Manufacture

ENGINE FAMILY AND TYPE CODES

The first two characters are letters, the first of which indicates the engine FAMILY and the second letter is the engine TYPE and PHASE:

FAMILY	TYPE	CODE
D2.101		A
	D2.101	AA
3.152		C
	P3	CA
	3.144	CB
	P3.144	CC
	3.152	CD
	D3.152	CE
	G3.152	CF
	P3.152	CG
4.108		E
	4.99	EA
	4.107	EB
	T4.107	EC
	4.108	ED
4.154		G
	4.154	GA
4.165		H
	4.165	HA
4.203		J
	P4	JA
	4.192	JB
	P4.192	JC
	4.203	JD
	D4.203	JE
	G4.203	JF
	4.2032	JG
4.236		L
	4.212	LA
	G4.212	LB
	4.224	LC
	4.236	LD
	G4.236	LE
	4.248	LF
4.270		N
	4.270	NA
	4.300	NB
	4.318	NC
6.305		P
	P6	PA
	6.288	PB
	6.305	PC
	PF6.305	PC
6.247		R
	6.247	RA
6.354		T
	6.306	TA
	6.335	TB
	6.354	TC
	H6.354	TD
	T6.354	TE
	HT6.354	TF
	6.3541	TG
	T6.3541	TH
	6.3542	TJ
	C6.3542	TK
	6.3543	TL
	C6.3543	TM
	H6.3543	TN
	T6.3543	TP
	HT6.3543	TQ
	6.372	TR
	6.3723	TS
	TC6.3541	TT
	T6.3544	TU
	6.3724	TV
	6.3544	TW
	C6.3544	TX
6.357		V
	6.357	VA
	6.3572	VB
	C6.3572	VC
	6.358	VD
V8.510		X
	V8.510	XA
	TV8.510	XB
	V8.540	XC
	V8.605	XD
V8.540		Z
	V8.540	ZA
	TV8.540	ZB

COUNTRY OF ORIGIN CODE

A code, as below, indicates the country in which the basic en was manufactured.

A	= ARGENTINE	N	= U.S.A.
B	= BRAZIL	P	= POLAND
C	= AUSTRALIA	R	=
D	= GERMANY	S	= INDIA
E	= SPAIN	T	= TURKEY
F	= FRANCE	U	= UNITED KINGD
G	= GREECE	V	=
H	=	W	= IRAN
J	= JAPAN	X	= PERU
K	= KOREA	Y	= YUGOSLAVIA
L	= ITALY	Z	=
M	= MEXICO		

YEAR OF MANUFACTURE CODE

The last character indicates the calendar year manufacture:—

B = 1975
C = 1976
D = 1977
E = 1978
Etc.

The letters I, O and Q, will not be used.

EXAMPLE OF MAIN ENGINE NUMBER

Example: XC21942U510123D

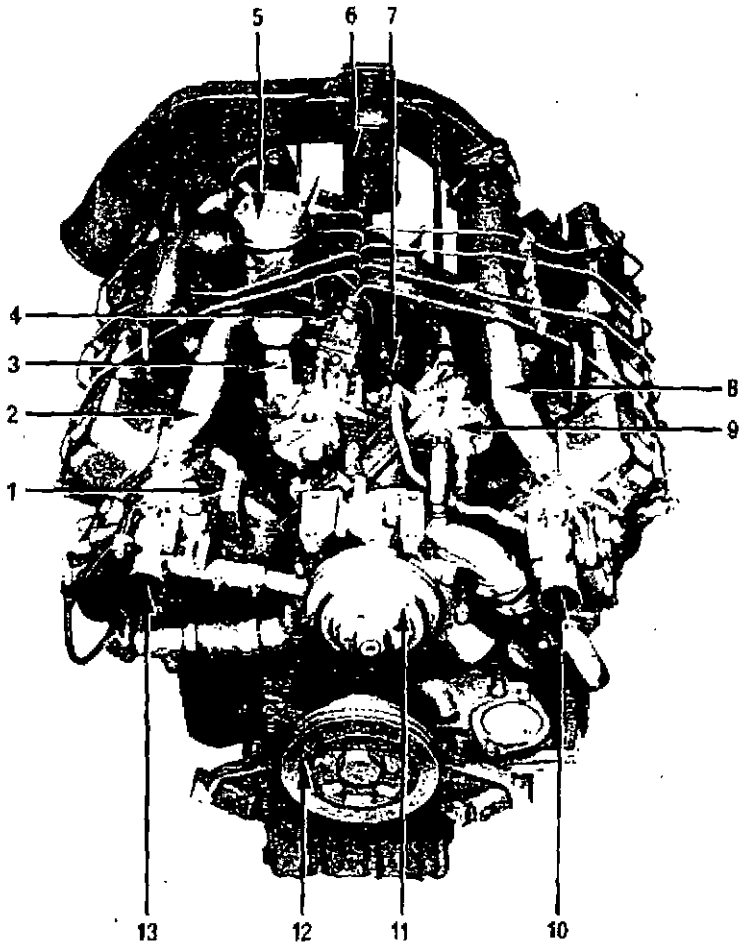
Thus:—

X	=	V8.510 Family
C	=	V8.540 Type
21942	=	Parts List Number
U	=	Built in United Kingdom
510123	=	Serial Number
D	=	Built in 1977

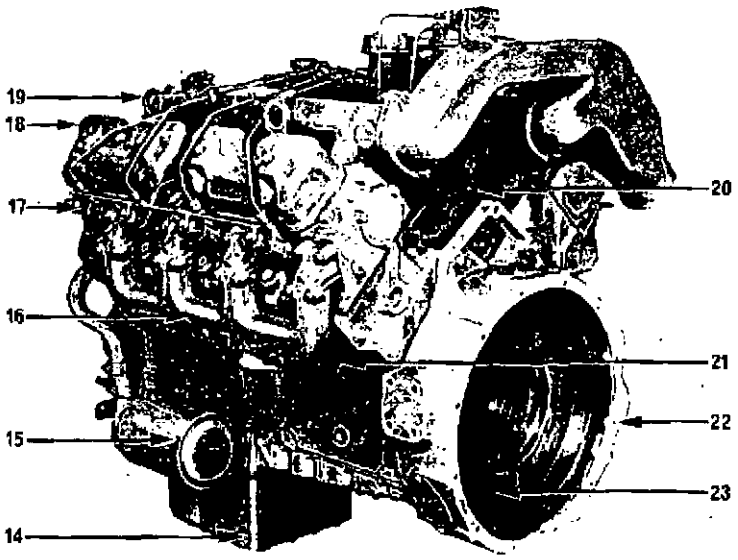
index to engine views

1 Engine Number Location
2 Inlet Manifold (Right Hand)
3 Lubricating Oil Filter
4 *Fuel Injection Pump*
5 Engine Breather
6 Fuel Filter
7 Fuel Lift Pump
8 Inlet Manifold (Left Hand)
9 Compressor
10 Water Outlet (Left Hand)
11 Water Pump Pulley
12 Crankshaft Pulley
13 Water Outlet (Right Hand)
14 Sump Drain Plug (Left Hand)
15 Oil Cooler
16 Exhaust Manifold (Left Hand)
17 *Atomiser*
18 Front Rocker Cover (Left Hand)
19 Front Lifting Bracket (Left Hand)
20 Fuel Injection Pump Anti-Stall Device
21 Cylinder Block Drain Tap (Left Hand)
22 Flywheel Housing
23 Flywheel
24 Cylinder Block Drain Tap (Right Hand)
25 Inlet Manifold Cross Over Pipe
26 Front Lifting Bracket (Right Hand)
27 Front Rocker Cover (Right Hand)
28 Lubricating Oil Dipstick
29 Atomiser Leak-Off Pipe (Right Hand)
30 Exhaust Manifold (Right Hand)
31 Lubricating Oil Filter
32 Sump Drain Plug (Right Hand)

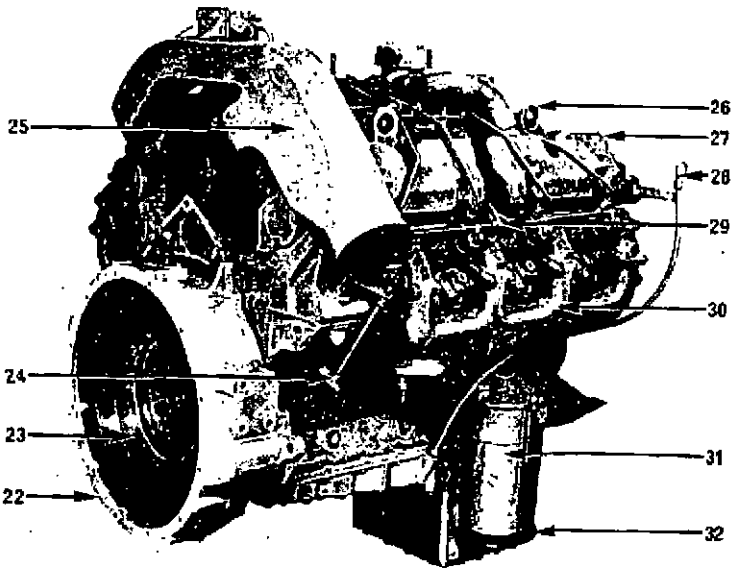
Perkins engines are built to individual requirements to suit the applications for which they are intended and the following engine views do not necessarily typify any *particular specification*.



View of Top Front of Engine



View of Rear Left Hand Side of Engine



View of Rear Right Hand Side of Engine

data

ENGINE SPECIFICATIONS

Type	Eight Cylinder, Four Stroke, Direct Injection, 90° "V".
Bore	4.25 in (108 mm) Nominal
Stroke (V8.540)	4.75 in (120,7 mm)
Stroke (V8.510)	4.5 in (114,3 mm)
Cubic Capacity (V8.540)	539.1 in^3 (8,84 litres)
Cubic Capacity (V8.510)	510.7 in^3 (8,36 litres)
Compression Ratio	16,5 : 1
Firing Order	1, 8, 7, 5, 4, 3, 6, 2.
Valve Tip Clearance	0.012 in (0,30 mm) cold
Lubricating Oil Pressure	30 lbf/in^2 (2,1 KGF/cm^2) — 207 kN/m^2 minimum at maximum engine speed and normal operating temperature.
Sump Capacity	Varies according to application. Use indicated level on the dipstick with vehicle or machine on level ground.
Engine Number Location	Top front of right hand bank of cylinder block (see page 6). Where left or right hand side or bank is referred to, this denotes the side looking from the rear of the engine towards the front.

ALTITUDE

If it is necessary to operate at altitudes above 2,000 ft (600 metre) then it may be necessary to derate the engine by reducing the amount of fuel being fed into the engine. Perkins Engines Ltd., will advise.

APPROVED FUEL OIL SPECIFICATIONS

United Kingdom	BS.2869:1967	Class A.1 or A.2.
United States	VV-F-800a A.S.T.M./D975-66T	Grades DF-A, DF-1 or DF-2 Nos. 1-D or 2-D
France	(J.O. 14/9/57)	Gas Oil or Fuel Domestique
India	IS: 1460/1968	Grade Special or Grade A
Germany	DIN-51601 (1967)	
Italy	CUNA-Gas Oil NC630-01 (1957)	
Sweden	SIS. 15 54 32 (1969)	
Switzerland	Federal Military Spec. 9140-335-1404 (1965)	

Fuel Oils available in territories other than those listed above which are to an equivalent specification may be used.

operating instructions

STARTING THE ENGINE

Where an engine, fitted with an in-line pump has been standing for a period exceeding one month, one pint (0,57 litre) of clean engine lubricating oil should be added to the in-line fuel injection pump before the engine is started. A filler plug is provided on the top of the governor housing (see Fig. 3). After this, the fuel pump is automatically lubricated from the engine lubricating system.

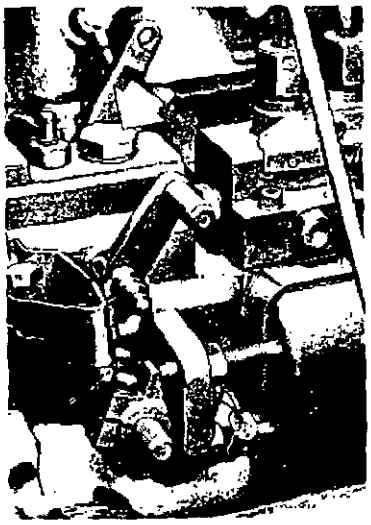


Fig. 1
In-line Fuel Injection Pump
Oil Filler Plug

Starting A Warm Engine

Ensure that the stop control is in the run position (where applicable).

With in-line pumps, set the accelerator to the fully open position. With distributor pumps, set the accelerator to the half open position.

Switch on by turning the starter key to position "R" (see Fig. 2 or 3).

Engage the starter motor by turning the key to position "S" or "HS".

As soon as the engine starts, release the key which should return to position "R".

Always be sure that the engine and starter motor have stopped rotating before re-engaging the starter motor, otherwise the flywheel starter ring or the starter pinion may be damaged.

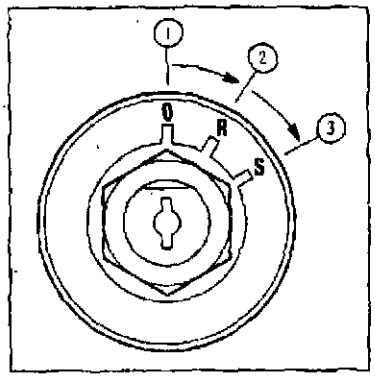


Fig. 2
Typical Starter Switch
1. Off Position
2. Run Position
3. Start Position

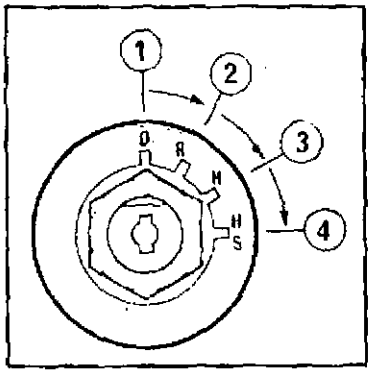


Fig. 3
Typical Heat/Start Switch
1. Off Position
2. Run Position
3. Heat Position
4. Heat and Start Position

Starting A Cold Engine (Without Heat Start)

In extreme cold conditions an approved ether starting aid may have to be used (See Page 16).

Ensure that the stop control is in the run position (where applicable).

Adjust the accelerator to the fully open position.

Operate the excess fuel. A remote control is usually provided that operates the excess fuel lever on the right hand side of the fuel injection pump. When the engine starts, the supply of excess fuel is stopped automatically.

Switch on by turning the starter key to position "R" (see Fig. 2).

Engage the starter motor by turning the key to position "S".

As soon as the engine starts, release the key which should return to position "R".

Always be sure that the engine and starter motor have stopped rotating before re-engaging the starter motor, otherwise the flywheel starter ring or the starter pinion may be damaged.

Starting A Cold Engine (With Heat Start)

In extreme cold conditions, an approved ether starting aid may have to be used (See this page).

Where heater type starting aids are fitted, they may be operated by a combined heat/start switch as shown in Fig. 3 or by a separate press switch. When the engine is cold, the starting procedure is as follows:—

Ensure that the stop control is in the run position (where applicable).

Adjust the accelerator to the fully open position.

Operate the excess fuel. A remove control is usually provided that operates the excess fuel lever on the right hand side of the fuel injection pump. When the engine starts, the supply of excess fuel is stopped automatically.

Switch on by turning the starter key to position "R" (see Fig. 2 or 3).

Operate the heaters by turning the key to position "H" or by pressing the separate heater switch and hold in this position for 15 to 20 seconds.

Keeping the heaters in operation, engage the starter by turning the key to the "HS" or "S" position. If the engine does not start in 20 seconds, switch off the starter and return to the "heat" condition for 10 seconds before re-engaging the starter.

NOTES ON HEAT START

If any difficulty is experienced with the heat start, check that fuel is reaching the starting aids. Operation of the heaters can be checked by removing the trunking to the inlet manifolds. The units should glow when the "Heat" position is selected and the fuel should ignite when the starter is engaged.

The engine is fitted with efficient cold starting equipment and no responsibility can be accepted for any damage caused by the use of unauthorised starting aids.

EXTREME COLD WEATHER STARTING AID

V8.540 and V8.510 engines may be fitted with the Start Pilot VISO-F starting aid for starting in extremely cold conditions.

When using this starting aid, the use of any heater device is strictly prohibited but the excess fuel device of the fuel injection pump should still be operated.

The pump should not be used until the starter motor has been engaged. In very cold conditions it may be necessary to assist engine running with a further one or two strokes of the pump to attain steady running.

To charge the container with fluid using only Start Pilot Multi-fill Can Type F, lift the hinged cover of the VISO-F reservoir. Press the can, head down, onto the filler valve and retain in a square position until fluid flows into the transparent bowl. **Do not allow the fluid level to rise above the maximum indicated by arrow markings on the bowl.**

The Start Pilot Viso-F unit incorporates an outlet check valve which minimises the risk of fluid loss during engine running time. Experience will show how much fluid is required for a single start under various temperatures and it is desirable to charge the reservoir with just sufficient fluid for a single start especially when the unit is mounted near the engine.

Very little maintenance is required for the Start Pilot equipment but observation of the following points will ensure efficient operation.

The air filter fitted at the outward end of the V20S pump cylinder should occasionally be examined and if necessary, removed and washed in Kerosene. A thin smear of light lubricating oil may be applied to the cylinder.

The spray nozzle may become partially blocked and this can be cleaned by dismantling from the engine induction manifold and washed in Kerosene.

If any starting difficulty is experienced do not continue using the Start Pilot pump but have the problem investigated by an experienced fitter.

Caution

The Start Pilot VISO-F unit uses high energy fuel with a low combustion temperature or flash point, therefore you are warned that this aid should only be used to start very cold engines.

If used carelessly or excessively or for the purpose of obtaining a boost of power, serious damage can occur to the engine for which we, as diesel engine manufacturers, cannot be held liable. If any damage does occur for the reasons stated, they are usually readily identified.

STOPPING THE ENGINE

A spring loaded stop control is usually situated near the normal engine controls and it is only necessary to pull out this control to stop the engine. When the engine has completely stopped, return the control to the run position. Switch off by

eturning the starter key to the "O" position. On some applications, the stop control s electrically operated from the starter switch.

RUNNING ADJUSTMENT

The driver or user of this engine must not interfere with the idling or maximum speed settings. Whilst the engine is under the manufacturers guarantee, the breaking or interference of the fuel pump seals by an unauthorised person may possibly render the guarantee null and void, because interference with the speeds set by the manufacturer can cause considerable damage to the engine and/or transmission.

RUNNING IN

It is not necessary to gradually run-in a new or factory rebuilt engine and any prolonged light load running during the early life of the engine can in fact prove harmful to the bedding in of piston rings and liners.

Full load can be applied on a new or factory rebuilt engine as soon as the engine is used, **provided that the engine is first allowed to reach a temperature of at least 100°F (60°C).**

preventive maintenance

Operators of engines are reminded that the following preventive maintenance periods are general in application. They should be compared with the schedules specified by the manufacturer of the application to which the engine is fitted and where necessary, the shorter periods should be adopted.

Whilst we have given specific periods for preventive maintenance, you should have due regard for the local regulations concerning your vehicle or machine and ensure that the engine is operating within those regulations.

DAILY OR EVERY 8 HOURS (WHICHEVER OCCURS FIRST)

Check coolant level.
Check sump oil level.
Check oil pressure (where gauge fitted).
In extreme dust conditions, empty dust bowl of dry type air cleaner.

EVERY 5,000 MILES (7,500 km), 200 HOURS or 4 MONTHS (WHICHEVER OCCURS FIRST)

Drain and renew engine lubricating oil.
Renew lubricating oil filter canisters.
Check alternator and water pump drive belt tension.
Empty dust bowl of dry type air cleaner.
Clean fuel water trap (where fitted).
Clean compressor air inlet filter (where fitted).
Check the engine for oil, coolant or fuel leaks.

EVERY 10,000 MILES (15,000 km), 400 HOURS or 12 MONTHS (WHICHEVER OCCURS FIRST)

Renew final fuel filter element(s) — Agricultural and Industrial Applications.
Service atomisers (all types except "VN").
Check and adjust valve tip clearances.
Check hoses and clips.
Clean or renew element of dry type air cleaner (if not indicated earlier).

EVERY 20,000 MILES (30,000 km) or 800 HOURS (WHICHEVER OCCURS FIRST)

Service "VN" type atomisers.
Clean breather gauzes.
Renew final fuel filter element(s) — Vehicle Applications.
Decarbonise compressor cylinder head and discharge line.

EVERY 60,000 MILES (90,000 km) or 2400 HOURS (WHICHEVER OCCURS FIRST)

Arrange for examination and service of proprietary equipment, i.e. Compressor, Starter Motor etc.

POST DELIVERY CHECKOVER

After a customer has taken delivery of his engine, a general checkover must be carried out by an experienced fitter after the first 500/1000 miles (800/1600 km) or 25/50 hours in service.

The checkover comprises the following: —

1. Run the engine until it is thoroughly warmed through, drain the lubricating oil sump and refill to the correct level with clean new oil to an approved grade (see page 41).
2. Renew lubricating oil filter canisters (see page 28).
3. Reset the valve tip clearances to 0.012 in (0,30 mm) with the engine cold (see page 30).
4. Check the tension of the water pump and alternator drive belts (see page 27).
5. Check the tightness of all external nuts, setscrews, mountings etc.
6. Run the engine and check for any fuel, coolant or lubricating oil leaks. Check the oil feed to the rockers.
7. Check the lubricating oil level and top up as necessary.
8. Adjust idling speeds if necessary.

Users of this engine must not interfere with engine speed settings as this can damage the engine and/or transmission. If the fuel pump seals are interfered with by an unauthorised person, it could render the guarantee null and void.

instructions for maintenance

AIR CLEANERS

Operating conditions play an important part in deciding how frequently it is necessary to service the air cleaner. Where the cleaner has a dust bowl fitted, the amount of dust present in the bowl, when removed, will show whether it is being emptied at the correct time for the prevailing conditions. If the dust bowl is allowed to become full it will reduce the life of the element.

If an automatic dust ejector is fitted, it should be kept clean and the lips of the rubber ejector checked to see that they close but do not adhere together.

Where a restriction indicator is fitted, this will give a positive indication that the air cleaner element needs attention and eliminate haphazard servicing. If you do not have a restriction indicator fitted, you should consider having one fitted on the trunking between the cleaner and the induction manifold – a 22 in water gauge indicator, fitted on the cleaner outlet, is suitable in the majority of cases. It should be remembered that the indicator does not show the amount of dust present in the dust bowl.

The type of air cleaner fitted to your vehicle or machine depends upon the manufacturer of your equipment. Usually, guidance for the method of servicing is shown on the body of the air cleaner, but the following advice may also help.

DRY TYPE TWO STAGE "CYCLOPAC" See Fig. 4

Dust Bowl

Unclamp the dust bowl, remove the baffle plate, empty out the dust and clean the bowl. The dust in the bowl should never be allowed to build up to within ½ in (13 mm) of the dust entry slot in the baffle. Do not use petrol (gasoline) for cleaning.

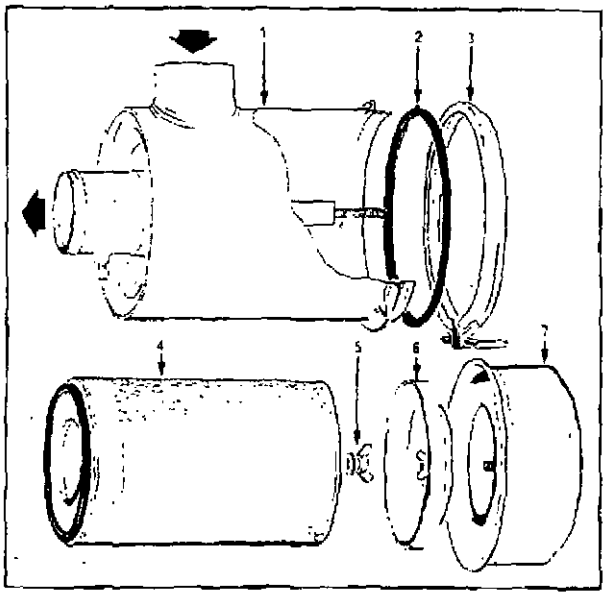


Fig. 4
"Cyclopac" Type Air Cleaner

1. Cleaner Body
2. Sealing Ring
3. Clamp
4. Element
5. Nut and Gasket
6. Baffle Plate
7. Dust Bowl

Refit the plate to the bowl, check that the bowl joint is serviceable and fit the bowl to the cleaner ensuring that, where the cleaner is mounted horizontally, the dust entry slot in the bowl is fitted at the top.

Element

When the dust bowl has been detached, the element can be removed after releasing the wing nut securing it to the body. The element can be cleaned as follows: —

If the element is contaminated by dry dust, it can be cleaned by directing clean dry air up and down the pleats on the clean air side of the element. The air pressure should not exceed 100 lbf/in² (7 kgf/cm²) 689 kN/m² and the nozzle should not be held too near the pleats.

If the element is contaminated by oil or soot, it can be washed in warm water at approximately 120°F (50°C) using a suitable non-foaming detergent as recommended by the air cleaner manufacturers. Allow the element to soak for at least 10 minutes and gently agitate at the end of the soaking period to remove loosened dirt. Rinse out thoroughly by directing clean water to the clean air side of the element and allow to dry — do not oven dry. **Never fit a wet element** to the cleaner as dust may be carried through the element by the water.

Inspect the cleaned element for damage by placing a bright light inside and looking through the element. Any thin spots, pin holes or other damage will render the element unfit for further use.

The element should be renewed after six cleanings or annually, whichever occurs first. You should bear in mind that an element that has been cleaned may require attention after a shorter period than when it was fitted new.

Clean the inside of the cleaner body and the fins and dry thoroughly ensuring that no dust or other foreign matter is allowed to enter the air cleaner outlet.

Do not use petrol (gasoline) for cleaning.

Inspect the joints and hoses and renew, where necessary.

Reassemble the cleaner ensuring that all the joints are leakproof.

DRY TYPE TWO STAGE "DUO-DRY" See Fig. 5

Dust Bowl

Unclamp the dust bowl, empty out the dust and clean the bowl — do not use petrol (gasoline) for cleaning. The dust in the bowl must never be allowed to build up to 1 in (25 mm) of the bottom of the tubes.

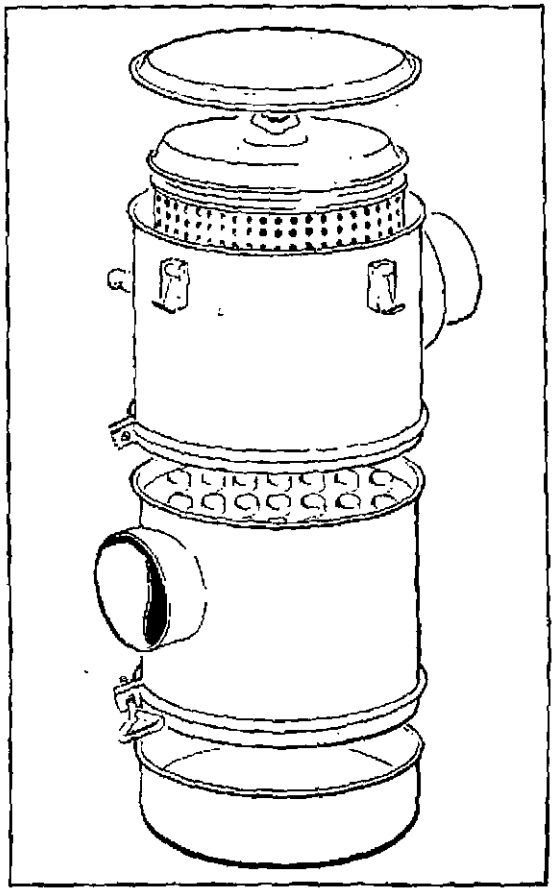


Fig. 5
"Duo-Dry" Type
Air Cleaner

Ensure that the bowl joint is serviceable and refit the bowl.

Element

Clean the top of the cleaner and then unclip and remove the top cover. Unscrew the wing nut and remove the inner cover and element.

Clean and inspect the element as detailed for the "Cyclopac" cleaner, bearing in mind that the clean side of the element of the "Duo-Dry" cleaner illustrated is the outside of the element.

Clean the inside of the body — do not use petrol. If the tubes are not too dirty, they can be cleaned with a stiff fibre brush but, if heavily contaminated

the tube body should be removed and cleaned with compressed air or warm water not exceeding 150°F (65°C).

Inspect all joints and hoses and renew where necessary.

Reassemble the cleaner ensuring that all parts are dry and all joints are leak-proof. If the tube body has been removed, tighten the clamp between it and the upper body before tightening the mounting clamp.

DRY TYPE TWO STAGE "CYCLONE" See Fig. 6

Unscrew the clamping screw ad remove the element retaining strip. Remove the seal plate and the element.

If the element is contaminated by dry dust, clean by carefully hand tapping the element or by directing low pressure compressed air on to the clean air side of the element.

If the element is contaminated by oil or soot, it can be cleaned by washing in a suitable non-foaming detergent solution. After washing, rinse out thoroughly

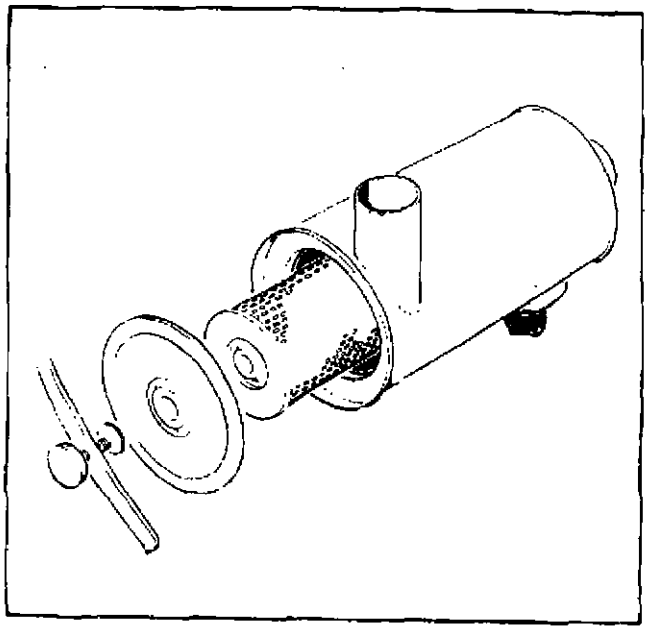


Fig. 6
"Cyclone" Type Air Cleaner.

by directing clean water on to the clean air side of the element and allow to dry — do not oven dry.

Inspect the cleaned element by placing a bright light inside and looking through the element. Any thin spots, pin holes or other damage will render the element unfit for further use. The element should be renewed after six detergent washes or annually, whichever occurs first.

Clean the inside of the cleaner body and dry thoroughly — do not use petrol (gasoline).

Inspect the joints and hoses and renew where necessary.

Reassemble the cleaner ensuring that all the joints are leakproof. Never fit a wet element to the cleaner as dust may be carried through the element by the water.

DRY TYPE MULTI-ELEMENT "ROTOPAMIC" See Fig. 7

The elements of this type of cleaner should not be cleaned but the complete filter cartridge should be renewed, when necessary.

Release the clamps and remove the moisture eliminator or pre-cleaner panel. Clean the openings in the panel of any dust, soot etc.

Remove the filter cartridge and clean the interior of the cleaner housing — do not use petrol (gasoline).

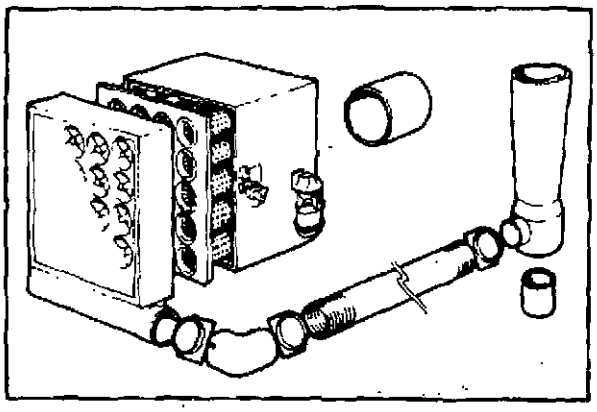


Fig. 7
"Rotopamic" Type Air Cleaner

Fit the new cartridge in position ensuring a positive seal by pressing around the edges of the cartridge — do not press in the centre.

Refit the moisture eliminator or pre-cleaner panel and reclamp in position.

RESTRICTION INDICATOR See Fig. 8

The restriction indicator is operated by the depression between the air cleaner and the engine and at a preset figure, the red warning indicator will remain locked up in a visible position after the engine has stopped running.

When the warning indicator is locked up, the air cleaner element should be removed and cleaned or renewed.

After the element has been serviced, the indicator should be released by pressing the reset button.

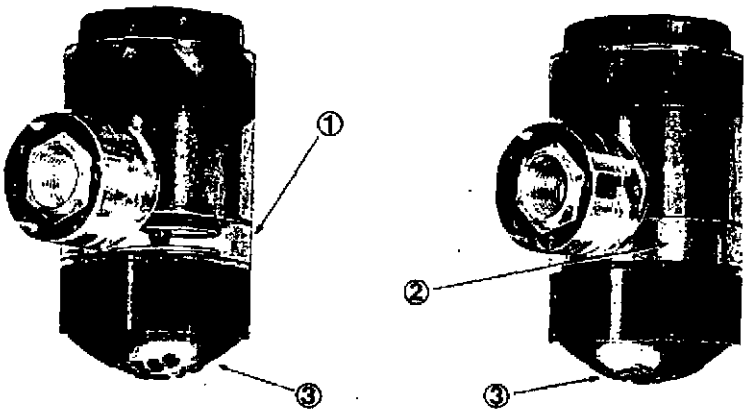


Fig. 8
Restriction Indicator
1. Transparent Panel (No restriction)
2. Red Panel (Service the Filter)
3. Resetting Button

TO ADJUST DRIVE BELT TENSION

Two types of drive belt arrangement can be found, the alternator is either driven by the twin water pump drive belts, as in Fig. 9, or by a separate single belt from the crankshaft pulley, as in Fig. 10.

The belts should never be allowed to become loose enough to slip nor should they be overtightened as this may cause overloading of the water pump or alternator bearings. A practical way to check for correct tension is to press each belt with the thumb applied midway along the longest unsupported length of the belt as shown in Fig. 8 or 9. Without undue pressure, you should be able to deflect the belt by 3/8 in (10 mm).

The tension of the combined water pump/alternator drive belts (Fig. 9) or the single alternator drive belt (Fig.10) can be adjusted by altering the position of the alternator. Loosen the nuts and bolts securing the alternator to its mounting bracket and adjusting lever and the setscrew securing the adjusting lever to the timing case. Move the alternator to give the correct tension, tighten the nuts and setscrew and recheck the belt tension.

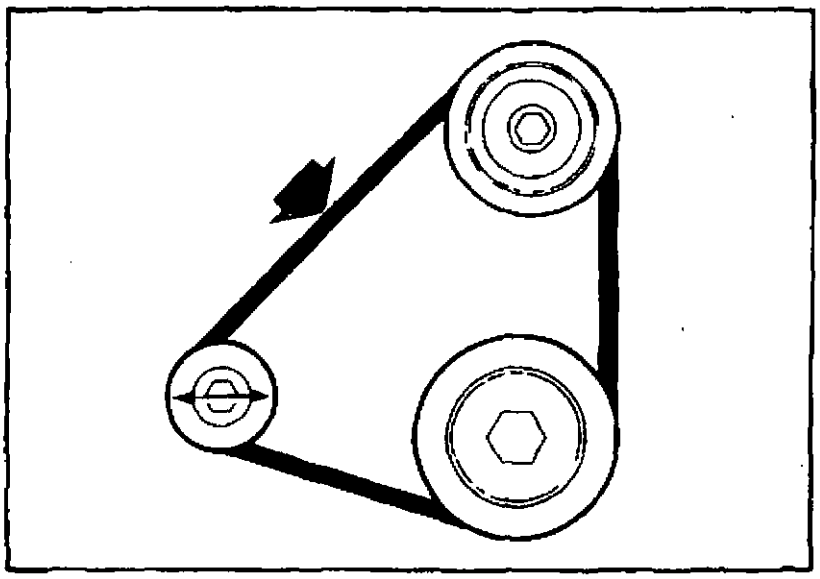


Fig. 9
Adjusting Combined Water Pump and Alternator Drive Belt Tension

The tension of the separate water pump drive belts can be adjusted by altering the position of the jockey pulley. Depending upon the engine application, this is done by either altering the position of a quadrant type pulley mounting bracket or by moving the pulley along a fixed bracket by means of an adjusting screw after the locking nut on the rear of the pulley shaft has been released. After adjusting the jockey pulley, secure the pulley mounting bracket or the pulley locking nut and re-check the belt tension.

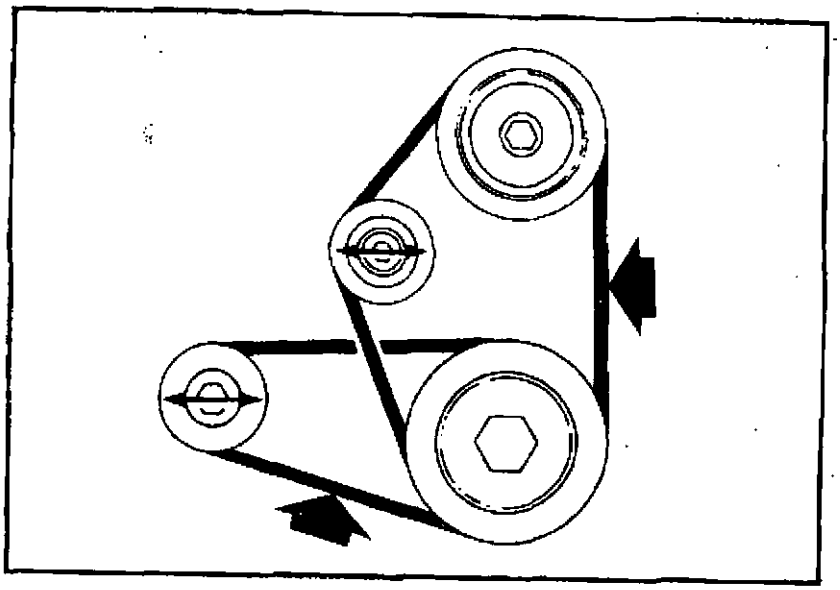


Fig. 10
Adjusting Tension of Separate Water Pump and Alternator Drive Belts

TO RENEW ELEMENTS OF STANDARD LUBRICATING OIL FILTER

(a) Thoroughly clean the exterior of the filter assembly.

(b) Release the setscrews at the bottom of the filter bowls.

(c) Lower the filter bowls clear (see Fig. 11).

(d) Remove the elements from the filter bowls and discard.

(e) Clean the inside of the filter bowls and the filter headcasting with a suitable cleaning fluid.

(f) Fit new rubber joints in the filter headcasting.

(g) Reassemble the filter with new elements and tighten the filter bowl securing setscrews.

(h) The filter elements will normally be changed at the same time as the lubricating oil and after filling the sump to the correct level with oil, run the engine and check for lubricating oil leaks. Re-check the oil level and top up as necessary.

NOTE: The setscrews securing the filter bowls should be checked for tightness after the first 1,000 miles (1,500 km) or 50 hours running.

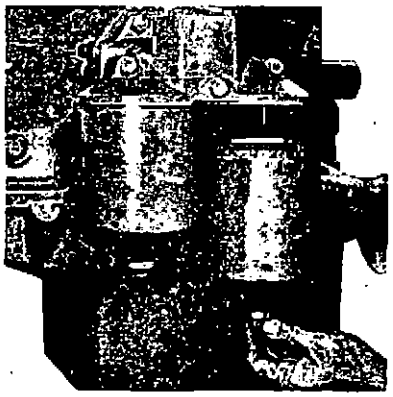


Fig. 11
Lowering Lubricating Oil Filter Bowl

Fig. 12
Renewing Replaceable Oil Filter Canister.

TO RENEW REPLACEABLE CANISTER OIL FILTER ELEMENTS

The lubricating oil filter elements for later applications are enclosed in replaceable canisters that are screwed to adaptors in the filter headcasting. These filter elements should be renewed as follows:—

(a) Remove the canisters from the filter headcasting (see Fig. 12).

(b) Check that the threaded adaptors (1) are secure in the headcasting.

(c) Discard the used canisters.

(d) Using clean engine lubricating oil, lightly oil the top seals of the replacement canisters.

(e) Prime canisters with lubricating oil allowing time for the oil to filter through element.

(f) Screw canisters onto filter head until seal just touches head and then tighten by hand as per instructions on canister. Where a tool is available, tighten to 15 lbf ft (2,07 kgf m) — 20 Nm.

(g) The filter canisters will normally be changed at the same time as the lubricating oil and after filling the sump to the correct level with oil, run the engine and check for leaks. Do not run the engine at high speed until oil pressure has built up.

(h) Recheck the oil level after running the engine and top as necessary.

NOTE: The filter canisters should be rechecked for leaks after the first 1,000 miles (1,500 km) or 50 hours running.

TO CHECK OR ADJUST VALVE TIP CLEARANCES

These clearances are measured between the top of the valve stem and the rocker lever (see Fig. 13) and should be 0.012 in (0,30 mm) for both inlet and exhaust with the engine cold. Each bank of the engine can be set or checked separately in the following manner:—

Left Bank (see Fig. 14)

(a) With the valves rocking on No. 4 cylinder (i.e. the period between the opening of the inlet valve and the closing of the exhaust valve), set the valve clearances on No. 1 cylinder.

(b) With valves rocking on No. 6 cylinder, set clearances on No. 7 cylinder.

(c) With valves rocking on No. 2 cylinder, set clearances on No. 5 cylinder.

(d) With valves rocking on No. 8 cylinder, set clearances on No. 3 cylinder.

Right Bank

(a) With valves rocking on No. 3 cylinder, set clearances on No. 8 cylinder.

(b) With valves rocking on No. 1 cylinder, set clearances on No. 4 cylinder.

(c) With valves rocking on No. 7 cylinder, set clearances on No. 6 cylinder.

(d) With valves rocking on No. 5 cylinder, set clearances on No. 2 cylinder.

Alternative Method

If desired, the valve tip clearances can be set in the firing order 1,8,7,5,4,3,6,2 by bringing the corresponding cylinders (see Fig. 14) to the rocking position in the order 4,3,6,2,1,8,7,5.

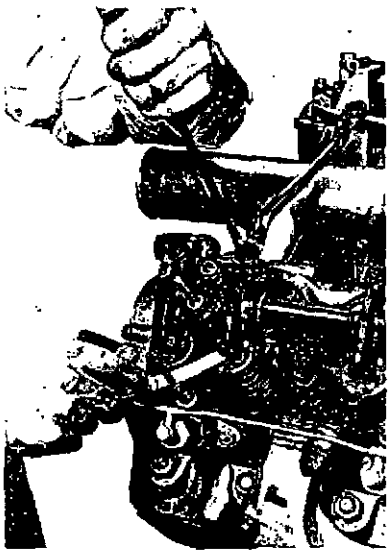


Fig. 13
Setting Valve Tip Clearance

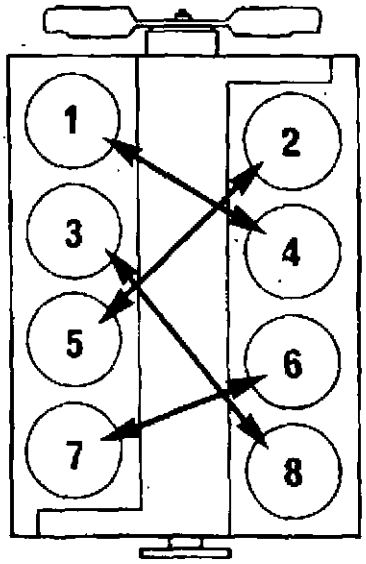


Fig. 14
Engine Cylinder Numbering Showing Corresponding Cylinders

ENGINE BREATHERS

Two types of engine breathers can be found, see Figs. 15 and 16.

TO CLEAN ENGINE BREATHER
See Fig. 15

Remove the top cover and withdraw the breather gauze. Wash the gauze and dry thoroughly.

If sludge is present in the breather body, remove the breather body and drain pipe, clean the body and blow through the pipe with high pressure air. Refit the breather and drain pipe to the engine.

Replace the gauze and top cover, using a jointing compound between the rim of the breather body and the top cover and secure the top cover with setscrews and spring washers. Refit the breather outlet pipe, where necessary.

On some earlier engines, a gauze was fitted in the hose between the rocker cover and breather. This has been found to be no longer necessary and may be discarded.

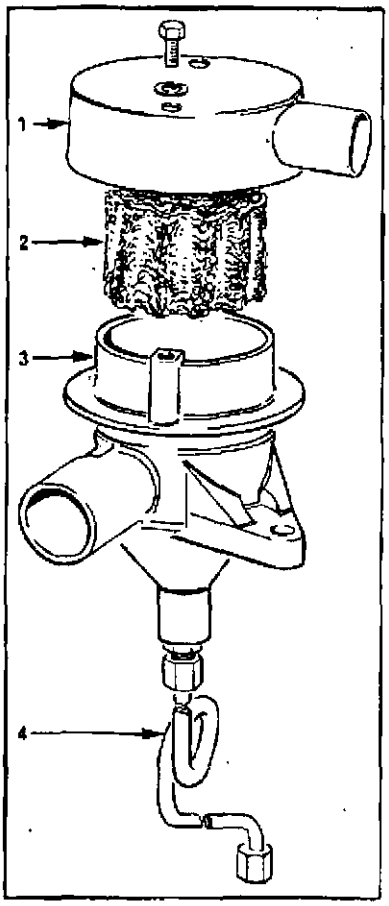


Fig. 15
Engine Breather
1. Top Cover
2. Gauze
3. Breather Body
4. Drain Pipe

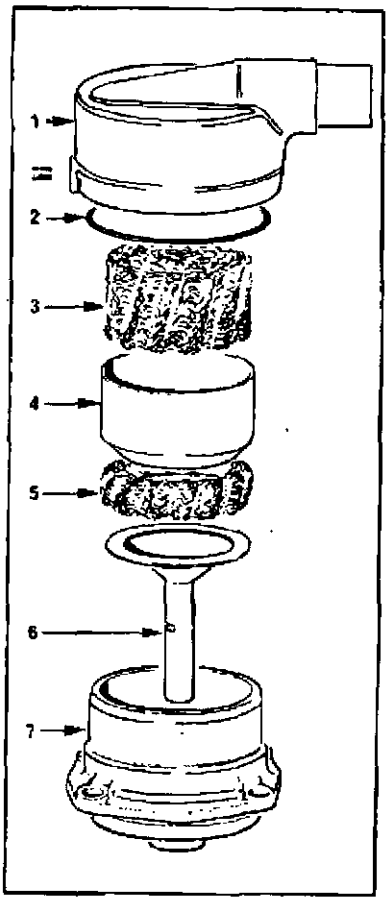


Fig. 16
Engine Breather
1. Top Cover
2. Sealing Ring
3. Top Gauze
4. Deflector
5. Bottom Gauze
6. Funnel
7. Breather Body

TO CLEAN ENGINE BREATHERS See Fig. 16

Remove the breather assemblies from the rocker covers.

Unscrew the grub screw and remove the cover, top gauze, deflector, bottom gauze and funnel from each breather body.

Wash the gauzes and component parts and dry thoroughly.

Assemble the breathers as follows: –

Position the funnel in the base.

Place the lower gauze around the inside of the body on top of the funnel.

Press the deflector into the body until the top of the deflector is level with the top of the body.

Fit the top gauze inside the deflector.

Check that the sealing ring is serviceable, fit the top cover and secure it with the grub screw.

Refit the breather assemblies to the rocker covers, using new joints and refit the breather outlet pipes, where necessary.

Where the engine is operating or standing in dusty conditions, it is advisable to remove and clean the top gauzes only at a more frequent interval than that given in "Preventive Maintenance" for cleaning breather gauzes.

TO RENEW ELEMENT IN FINAL FUEL FILTER (SINGLE BOWL TYPE)

(a) Thoroughly clean the exterior of the fuel filter assembly.

(b) Unscrew the setscrew in the centre of the filter head, lower the base and discard the filter element (see Fig. 17).

(c) Thoroughly clean the filter head and base.

(d) Inspect the sealing rings and renew if damaged in any way.

(e) Place the base squarely on the bottom of the new filter element and offer up the assembly squarely to the filter head so that the top rim of the filter element locates centrally against the sealing ring in the filter head.

(f) Hold in this position whilst the securing setscrew is located and screwed home. After the filter has been reassembled, it is necessary to remove air by bleeding the system as detailed on page 34.

TO RENEW ELEMENTS OF FINAL FUEL FILTER (TWIN BOWL TYPE)

The final fuel filter where a distributor pump is fitted, is a twin element parallel flow unit. Both elements should be changed at the same time as follows: –

(a) Throughly clean the exterior of the filter assembly. Where drain taps are fitted to the filter bowls, drain the fuel from the filter.

(b) Holding each filter bowl in turn, unscrew the setscrews securing the filter elements and remove the filter elements and bowls (see Fig. 18).

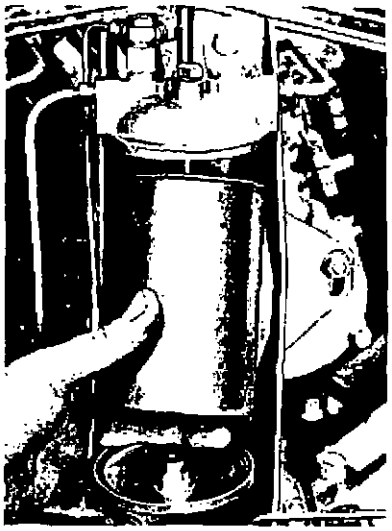


Fig. 17
Removing Final Fuel Filter Element (Single bowl type).

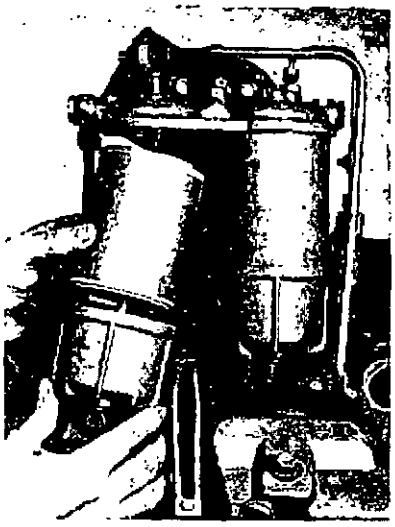


Fig. 18
Removing Final Fuel Filter Element (Twin bowl type).

(c) Clean the inside of filter head and bowls.

(d) Inspect the sealing rings and renew if damaged in any way.

(e) Place the bowls squarely on the bottom of the new filter elements and offer up each assembly squarely to the filter head so that the top rim of the element locates centrally against the seal ring in the head. Hold in this position whilst the securing setscrew is located and screwed home.

(f) After the filter has been re-assembled, it is necessary to remove any air by bleeding the system as described later.

BLEEDING THE FUEL SYSTEM (IN-LINE PUMP)

Air in the fuel system can cause difficult starting, erratic running and loss of power.

Air can enter the fuel system as a result of running out of fuel, leaks in the system, changing filter elements or disturbance of fuel connections to the pump.

Should there be air in the fuel system, the system should be bled as follows:

(a) Unscrew by two or three turns the vent plug on top of the filter (see Fig. 19) and one of the two vent plugs of the fuel injection pump (see Fig. 20).

(b) Operate the priming lever of the fuel lift pump (see Fig. 21) until fuel, free from air bubbles, issues from each venting point. If the fuel lift pump driving cam is on maximum lift, it will not be possible to operate the hand primer. If so, turn the crankshaft one revolution.

(c) Tighten the fuel filter vent plug and then the fuel injection pump vent plug and the engine is ready for starting.

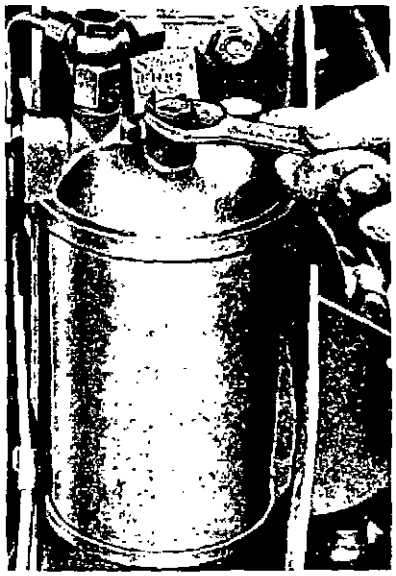


Fig. 19
Unscrewing Fuel Filter Vent Plug
(In-Line Pump)

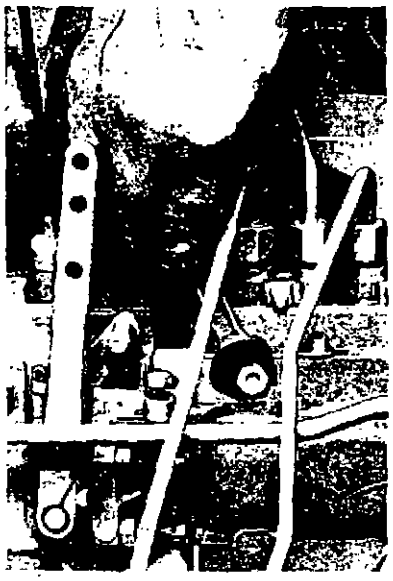


Fig. 20
Unscrewing a Fuel Injection
Pump Vent Screw
(In-Line Pump)

If, after bleeding the fuel system, the engine starts, runs satisfactorily for a few moments and then loses power, misfires or stops and when checked the system is found to be full of air, then a leak on the suction side is indicated.

NOTE: On some engines a non-return valve is fitted to the fuel injection pump in place of the forward vent plug shown in Fig. 20 with a pipe fitted between the valve and the fuel filter. This arrangement makes the system self-bleeding by providing a continuous flow through the pump. It may be adviseable, however, where a large amount of air has entered the system, to bleed the system manually, as detailed above, using the rear vent plug of the fuel injection pump.

Fig. 21
Operating Priming Lever of Fuel Lift Pump (In-Line Pump)

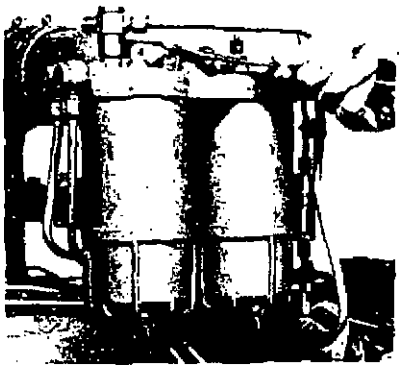


Fig. 22
Unscrewing Fuel Filter Vent Plug (Distributor Pump)

BLEEDING THE FUEL SYSTEM (DISTRIBUTOR PUMP)

Air in the fuel system can cause difficult starting, erratic running and loss of power.

Air can enter the fuel system as a result of running out of fuel, leaks in the system, changing filter elements or disturbance of fuel connections to the pump.

Although the fuel system is self bleeding during normal running, it should be bled manually as described below, when a large quantity of air has entered the system — due to filter element change etc. Before bleeding, clean the area around the vent points.

(a) Unscrew the vent plug on top of the final fuel filter (see Fig. 22) by two or three turns.

(b) Release the clip securing priming plunger on fuel lift pump and operate the plunger (see Fig. 23) until fuel, free from air bubbles, flows from the filter venting point. Tighten the filter vent plug.

Fig. 23
Operating Priming Lever of
Fuel Lift Pump
(Distributor Pump)

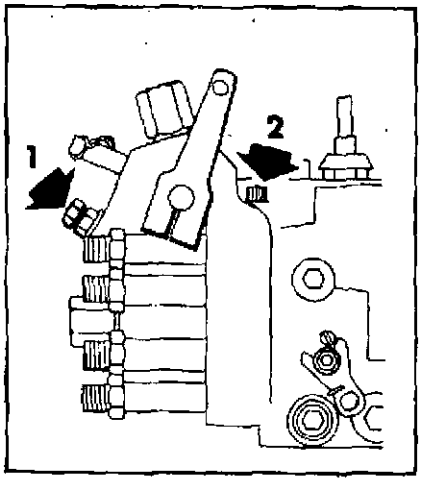


Fig. 24
Fuel Injection Pump Vent Plugs
(Distributor Pump)

(c) Unscrew the vent screw (see item 1, Fig. 24) on the rear of the fuel pump by two or three turns. Operate the priming plunger until air free fuel flows from the venting point and tighten the vent screw. Lock priming lever into lift pump with the clip.

(d) Remove the vent plug and washer from the top right hand side of the fuel injection pump (see item 2 — Fig. 24). Crank engine over on starter motor with stop control in run position until air free fuel flows from this venting point. Refit vent plug and washer.

(e) Slacken the unions at the atomiser end of two of the high pressure pipes. Set the speed control to the fully open position, ensure that the stop control is in the "run" position and crank the engine until air free fuel issues from both pipes. Tighten the two high pressure fuel pipe connections and the engine is ready for starting.

If, after bleeding the fuel system, the engine starts, runs satisfactorily for a few moments and then loses power, misfires or stops and when checked, the system is found to be full of air, then a leak on the suction side is indicated.

frost precautions

Precautions against damage by frost should be taken if the engine is to be left exposed to frost either by adequately draining the water system or using an anti-freeze of reputable make incorporating a suitable corrosion inhibitor.

If you decide to add anti-freeze to the cooling system, it is advisable that the manufacturers of the mixture be asked if their products are suitable for use in Perkins engines and also that their products will have no harmful effects on the cooling system generally. It is our experience that the best results are obtained from anti-freeze which conforms to British Standard 3151 or has been approved by testing in accordance with BS 5117 Clause 5 to give at least as good a result as BS 3151.

The coolant solution containing 25 per cent antifreeze manufactured to BS3151 in water in a properly maintained engine should maintain its antifreeze and anti-corrosive properties throughout the winter season in the U.K. and in general, a safe life of 12 months may be reasonably expected.

After an anti-freeze has been used, the cooling system should be thoroughly flushed in accordance with the manufacturers instructions before refilling with normal coolant.

When draining the cooling system, it is not enough merely to open the radiator drain tap. The two on the cylinder block and oil cooler plug must also be opened. The taps are on each side of the cylinder block near the flywheel housing. Later engines may have drain plugs. Where a pressurised radiator filler cap is used, this should be removed before draining the cooling system.

When draining coolant, ensure engine is level.

Sometimes it is possible for a small quantity of water to remain lodged in the bottom of the water pump after draining. If this freezes it could prevent the impeller from turning when the engine is next used with consequent overheating. If the water pump pulley cannot be turned by hand, the cooling system should be filled with warm water before starting.

If the foregoing action is taken, no harmful effects should be experienced, but Perkins Engines Ltd. cannot be held responsible for any frost damage or corrosion which may be incurred.

preservation of a laid up engine

It is recommended that the following procedure be adopted and applied immediately the unit is withdrawn from service:—

1. Thoroughly clean all external parts of the engine.
2. Where a preservative fuel is to be used, drain fuel system and refill with preservative fluid.
3. Run the engine until well warmed through. Stop the engine and drain the lubricating oil sump.
4. Renew elements or canisters in full flow lubricating oil filter.
5. Fill sump to correct level with clean new lubricating oil or with a suitable preservation fluid.
6. Run engine for a short period to circulate the lubricant or fluid.
7. Drain water from radiator cylinder block and oil cooler.
8. Clean out engine breather pipe.
9. Remove atomisers and spray into the cylinder bores, ¼ pint (0,14 litre) of lubricating oil divided between the eight cylinders.
10. Slowly turn engine one revolution and replace atomisers.
11. Remove the air cleaner(s) and any intake pipes which may be fitted between the air cleaner and the induction manifolds. Carefully seal air intake orifices with water-proofed adhesive tape or some other suitable medium.
12. Remove exhaust pipes and seal openings in manifolds as in "11".
13. Disconnect the battery and store in a fully charged condition. Before storing, the battery terminals should be treated to prevent corrosion.
14. Where a preservative is not used in the fuel system, it may be left charged with normal fuel oil. In this case before re-commencing operations, the fuel tank should be drained and the interior of the tank thoroughly cleaned. The fuel oil drained off should be discarded as unfit for further use. The element in the final fuel filter and the intermediate filter, where fitted must also be renewed before commencing service.

    Note: Where a preservative is used in the lubricating oil sump, this should be drained off and replaced by normal lubricant prior to re-starting the engine at the end of the storage period.

FAULTY ATOMISER (INJECTOR)

A faulty atomiser may show itself as in intermittent or consistent misfire and can be detected by running the engine at a fast idling speed and slackening off each atomiser pipe union in turn taking particular notice of the note of the engine. The faulty atomiser will have little or no effect upon the engine note as the union is slackened off. Replace with a known good atomiser, not forgetting to replace the washer upon which the atomiser seats in the cylinder head.

REPLACING AN ATOMISER (INJECTOR)

Never bend the high pressure pipe between the atomiser and the fuel injection pump. Remove the pipe completely.

Fit the replacement atomisers with new seating washer and serviceable dust seal, as square as possible into the head by pulling down with the securing nuts a little at a time, each side in turn.

The atomiser securing nuts should be tightened to a torque of 12 lbf ft (1,6 kgf m) or 15 Nm.

The high pressure pipe nuts should be tightened to a torque of 15 lbf ft (2,1 kgf m) or 20 Nm.

Having fitted atomiser and pipe, run the engine and listen for any "blowing" from the atomiser seat which will indicate that it is not square with the cylinder head. Carefully ease off the atomiser securing nuts in turn and retighten until the "blowing" stops. Check for fuel leaks at the pipe unions.

WARNING — Do not start engine with loose atomiser nuts, the atomiser may fly out.

LUBRICATING OILS

Lubricating oils should meet the requirements of the Ordnance Specifications MIL-L-46152 or MIL-L-2104C. Lubricating oils for engines installed in heavy duty earthmoving equipment should meet the U.S. Ordnance Specification MIL-L-2104C.

Some of these oils are listed below. Any other oils which meet these specifications are also suitable.

MIL-L-46152 OILS

Company	Brand	SAE Designation		
		0°F (-18°C) to 30°F (-1°C)	30°F (-1°C) to 80°F (27°C)	Over 80°F (27°C)
B.P. Ltd.	Vanellus M	10W	20W	30
	Vanellus M		20W-50	20W-50
Castrol	Castrol/Deusol CRB	10W	20	30
	Castrol/Deusol CRB	5W/20		
	Castrol/Deusol CRB	10W/30	10W/30	10W/30
	Castrol/Deusol CRB		20W/50	20W/50
	Deusol RX Super		20W/40	20W/40
A. Duckham & Co. Ltd.	Fleetol HDX	10	20	30
	Q Motor Oil		20W/50	20W/50
	Fleetol Multi V		20W/50	20W/50
	Fleetol Multilite	10W/30	10W/30	10W/30
	Farmadcol HDX		20	30
Mobil Oil Co. Ltd.	Delvac 1200 Series	1210	1220	1230
	Delvac Special	10W/30	10W/30	10W/30
Shell	Rotella TX	10W	20W/20	30
	Rotella TX		20W/40	20W/40

MIL-L-2104C OILS

Company	Brand	SAE Designation		
		0°F (-18°C) to 30°F (-1°C)	30°F (-1°C) to 80°F (27°C)	Over 80°F (27°C)
B.P. Ltd.	Vanellus C3	10W	20W/20	30
Castrol Ltd.	Castrol/Deusol CRD	10W	20	30
	Deusol RX Super		20W/40	20W/40
	Agricastrol HDD	10W	20	30
	Agricastrol MP		20W/30	20W/30
	Agricastrol MP		20W/40	20W/40
A. Duckham & Co. Ltd.	Fleetol 3	3/10	3/20	3/30
	Farmadcol 3	3/10	3/20	3/30
Esso Petroleum Co. Ltd.	Essolube D-3 HP	10W	20W	30
Mobil Oil Co. Ltd.	Delvac 1300 Series	1310	1320	1330
Shell	Rimula CT	10W	20W/20	30
	Rotella TX	10W	20W/20	30
	Rotella TX		20W/40	20W/40

Where oils to the MIL-L-46152 or MIL-L-2104C specification are not available, then oils to the previous specification MIL-L-2104B may continue to be used providing they give satisfactory service.

Lubricating oils for use in Perkins diesel engines should have a minimum viscosity index of 80.

The above specifications are subject to alteration without notice.

fault finding chart

Fault	Possible Cause
Low cranking speed	1, 2, 3, 4.
Will not start	5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 31, 32, 33.
Difficult starting	5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 24, 29, 31, 32, 33.
Lack of power	8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33.
Misfiring	8, 9, 10, 12, 13, 14, 16, 18, 19, 20, 25, 26, 28, 29, 30, 32.
Excessive fuel consumption	11, 13, 14, 16, 18, 19, 20, 22, 23, 24, 25, 27, 28, 29, 31, 32, 33, 63.
Black exhaust	11, 13, 14, 16, 18, 19, 20, 22, 24, 25, 27, 28, 29, 31, 32, 33.
Blue/White exhaust	4, 16, 18, 19, 20, 25, 27, 31, 33, 34, 35, 45, 56.
Low oil pressure	4, 36, 37, 38, 39, 40, 42, 43, 44, 58.
Knocking	9, 14, 16, 18, 19, 22, 26, 28, 29, 31, 33, 35, 36, 45, 46, 59.
Erratic running	7, 8, 9, 10, 11, 12, 13, 14, 16, 20, 21, 23, 26, 28, 29, 30, 33, 35, 45, 59.
Vibration	13, 14, 20, 23, 25, 26, 29, 30, 33, 45, 47, 48, 49.
High oil pressure	4, 38, 41.
Overheating	11, 13, 14, 16, 18, 19, 24, 25, 45, 50, 51, 52, 53, 54, 57.
Excessive crankcase pressure	25, 31, 33, 34, 45, 55.
Poor compression	11, 19, 25, 28, 29, 31, 32, 33, 34, 46, 59.
Starts and stops	10, 11, 12.

KEY TO FAULT FINDING CHART

1. Battery capacity low.
2. Bad electrical connections.
3. Faulty starter motor.
4. Incorrect grade of lubricating oil.
5. Low cranking speed.
6. Fuel tank empty.
7. Faulty stop control operation.
8. Blocked fuel feed pipe.
9. Faulty fuel lift pump.
10. Choked fuel filter.
11. Restriction in induction system.
12. Air in fuel system.
13. Faulty fuel injection pump.
14. Faulty atomisers or incorrect type.
15. Incorrect use of cold start equipment.
16. Faulty cold starting equipment.
17. Broken fuel injection pump drive.
18. Incorrect fuel pump timing.
19. Incorrect valve timing.
20. Poor compression.
21. Blocked fuel tank vent.
22. Incorrect type or grade of fuel.
23. Sticking throttle or restricted movement.
24. Exhaust pipe restriction.
25. Cylinder head gasket leaking.
26. Overheating.
27. Cold running.
28. Incorrect tappet adjustment.
29. Sticking valves.
30. Incorrect high pressure pipes.
31. Worn cylinder bores.
32. Pitted valves and seats.
33. Broken, worn or sticking piston ring(s).
34. Worn valve stems and guides.
35. Overfull air cleaner or use of incorrect grade of oil.
36. Worn or damaged bearings.
37. Insufficient oil in sump.
38. Inaccurate gauge.
39. Oil pump worn.
40. Pressure relief valve sticking open.
41. Pressure relief valve sticking closed.
42. Broken relief valve spring.
43. Faulty suction pipe.
44. Choked oil filter.
45. Piston seizure/pick up.
46. Incorrect piston height.
47. Damaged fan.
48. Faulty engine mounting (housing).
49. Incorrectly aligned flywheel housing of flywheel.
50. Faulty thermostat.
51. Restriction in water jacket.
52. Loose water pump drive belts.
53. Choked radiator.
54. Faulty water pump.
55. Choked breather pipe.
56. Damaged valve stem oil deflectors (if fitted).
57. Coolant level too low.
58. Blocked sump strainer.
59. Broken valve spring.

V8.510 parts section

This Operators Parts Book is provided to act as a guide to assist you when ordering parts.

Whilst every effort is made to illustrate latest parts, owing to the company's policy of continuous improvement some slight variations may occur.

SOURCE OF SUPPLY

Parts are available from Perkins Overseas Companies, Associate Companies, Manufacturing Licensees, Distributors and the applicable Franchise holders of Perkins Powered Machine Manufacturers. We are unable to deal direct with the operator and therefore parts should be obtained by placing a firm order with one of the aforementioned sources of supply.

NOTE

When parts are required for your Perkins engine always quote the engine number, the machine name, description and serial number so that your requirements can be identified.

CPO 2266

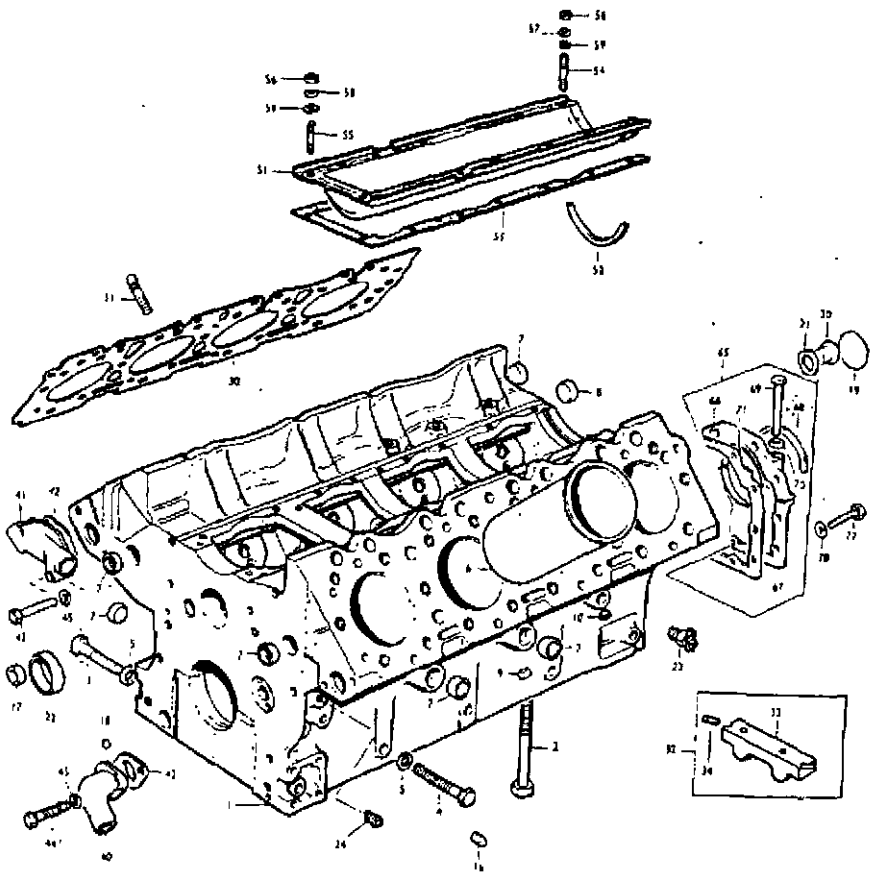
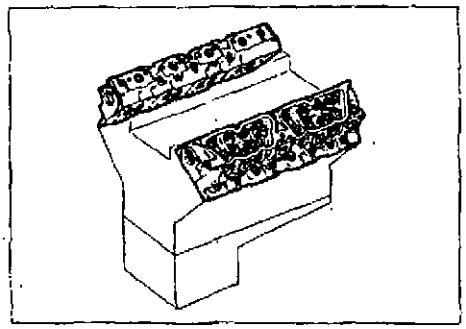


PLATE A
V8.510 CYLINDER BLOCK SECTION

CPO 2267



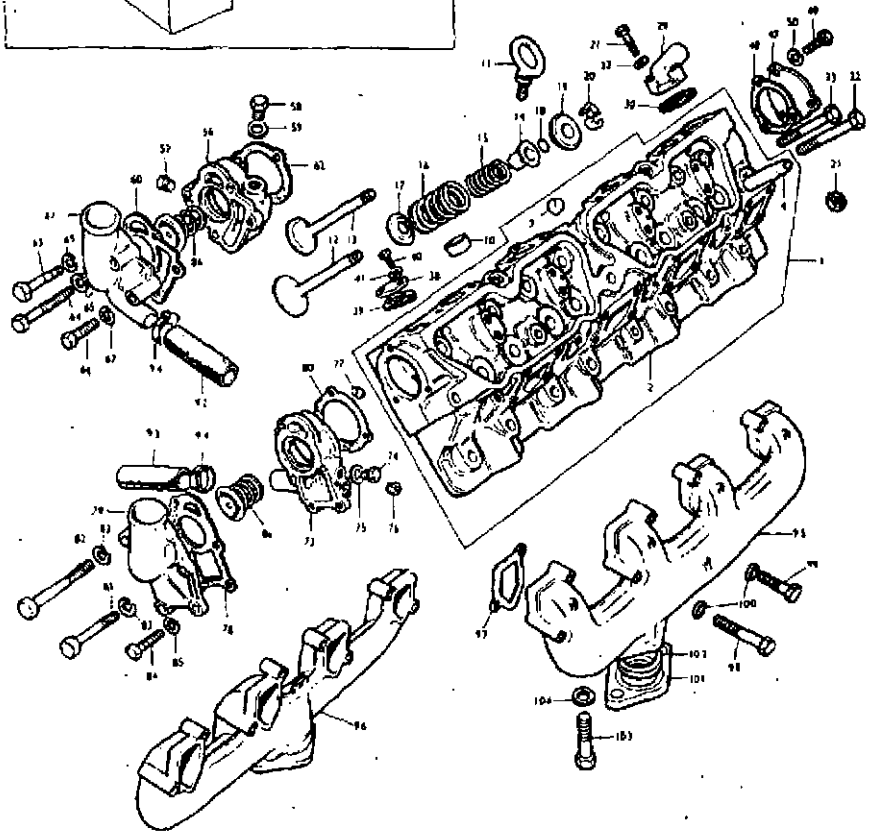


PLATE B
V8.510 CYLINDER HEAD SECTION

CPO 2268

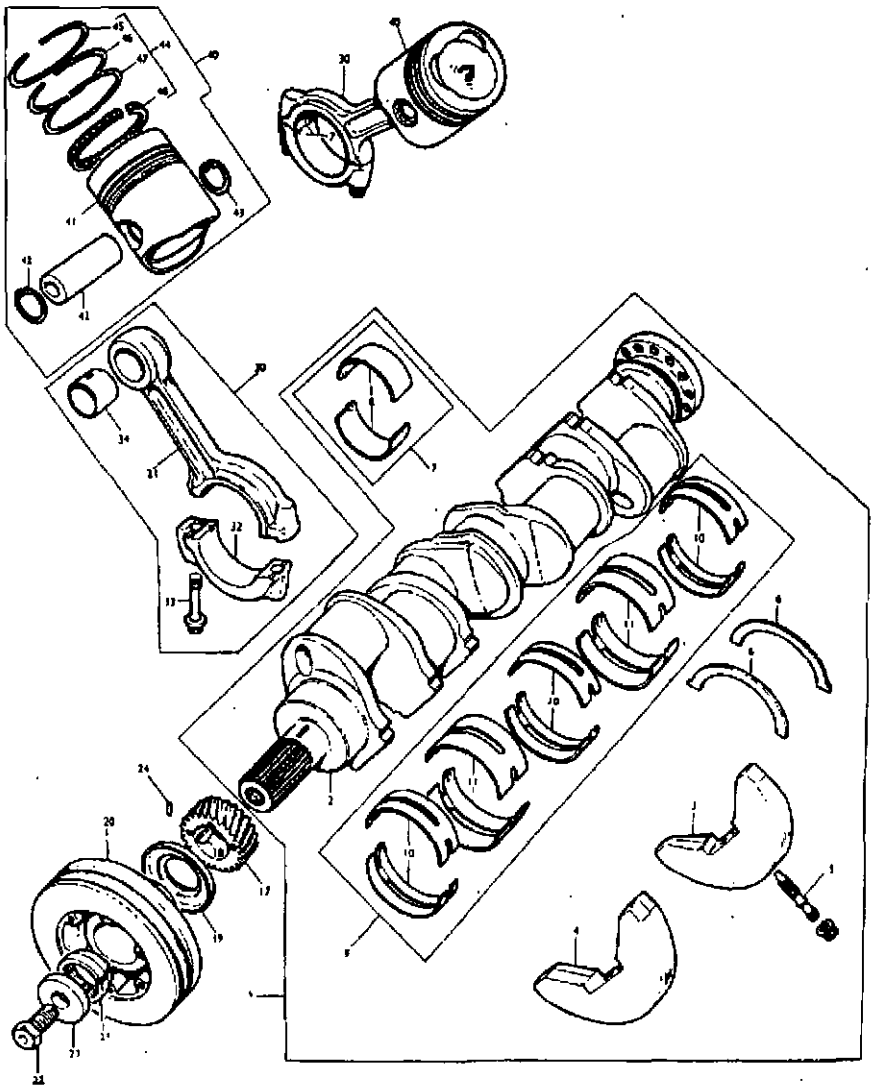


PLATE C
V8.510 CRANKSHAFT SECTION

CPO 2269

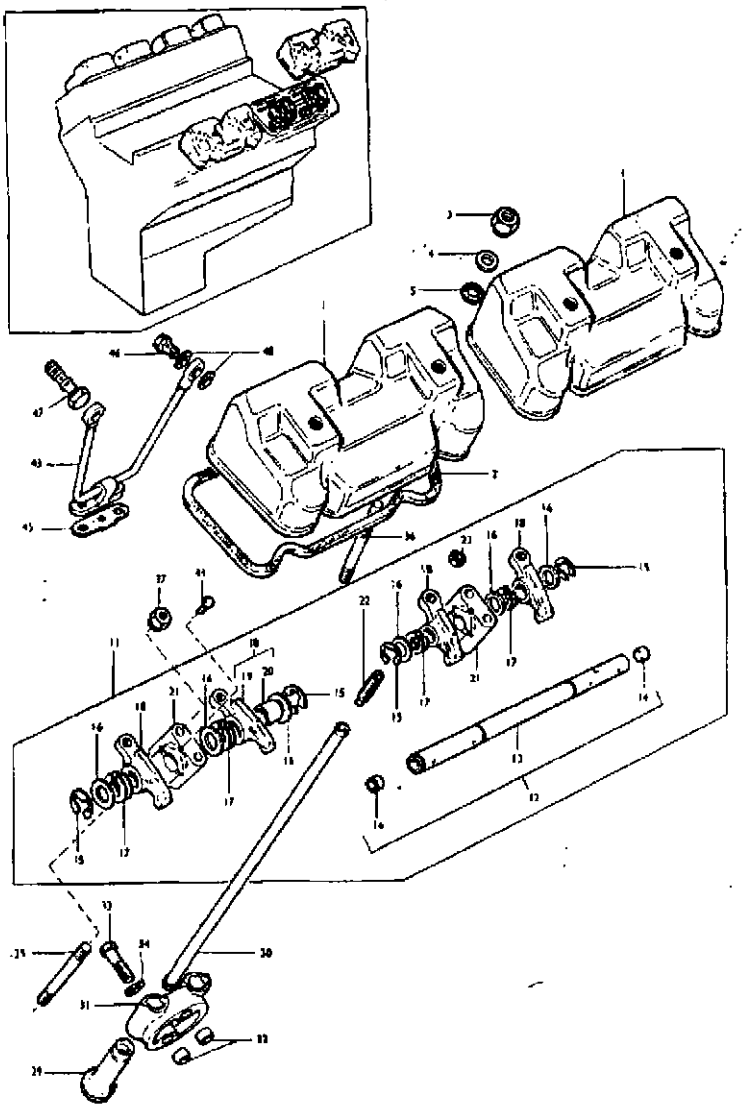


PLATE D
V8.510 CYLINDER HEAD COVER SECTION

CPO 2270

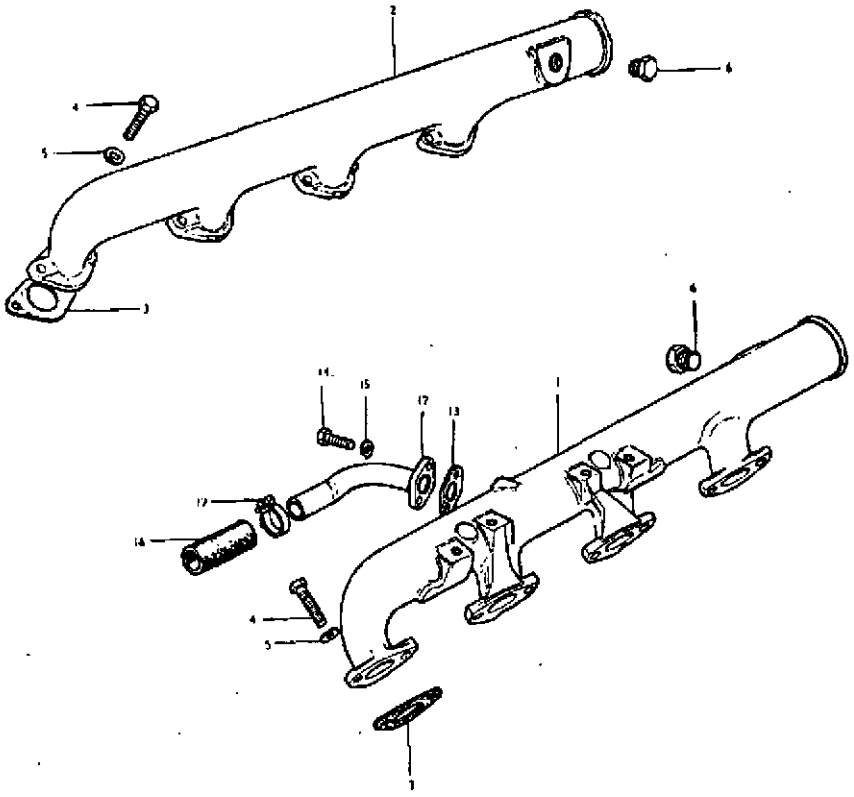


PLATE E
V8.510 AIR INDUCTION SECTION

CPO 227i

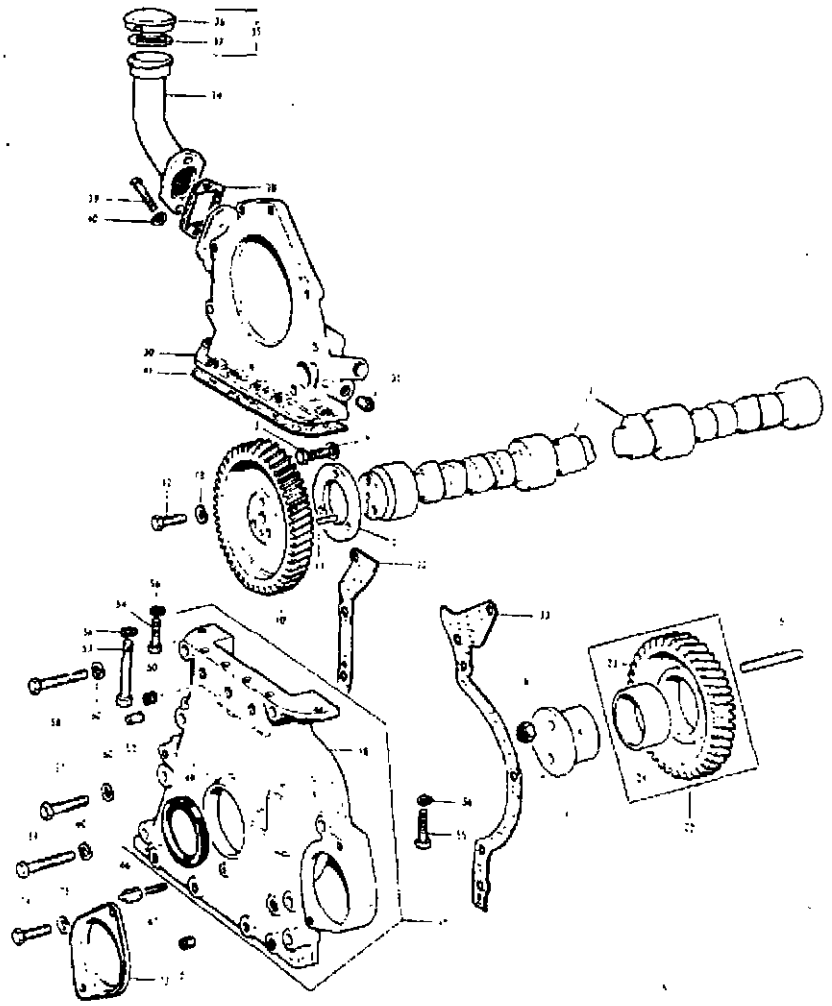


PLATE F
V8.510 TIMING GEAR SECTION

CPO 2272

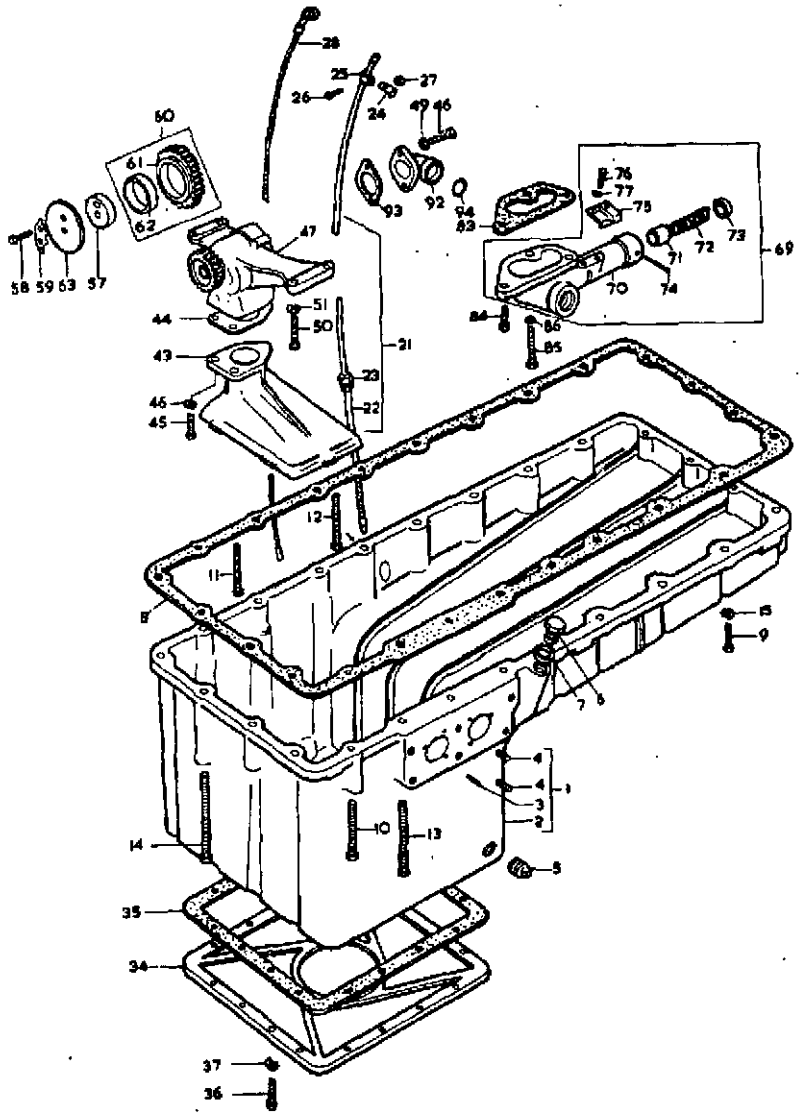


PLATE G1
V8.510 LUBRICATING OIL SYSTEM SECTION

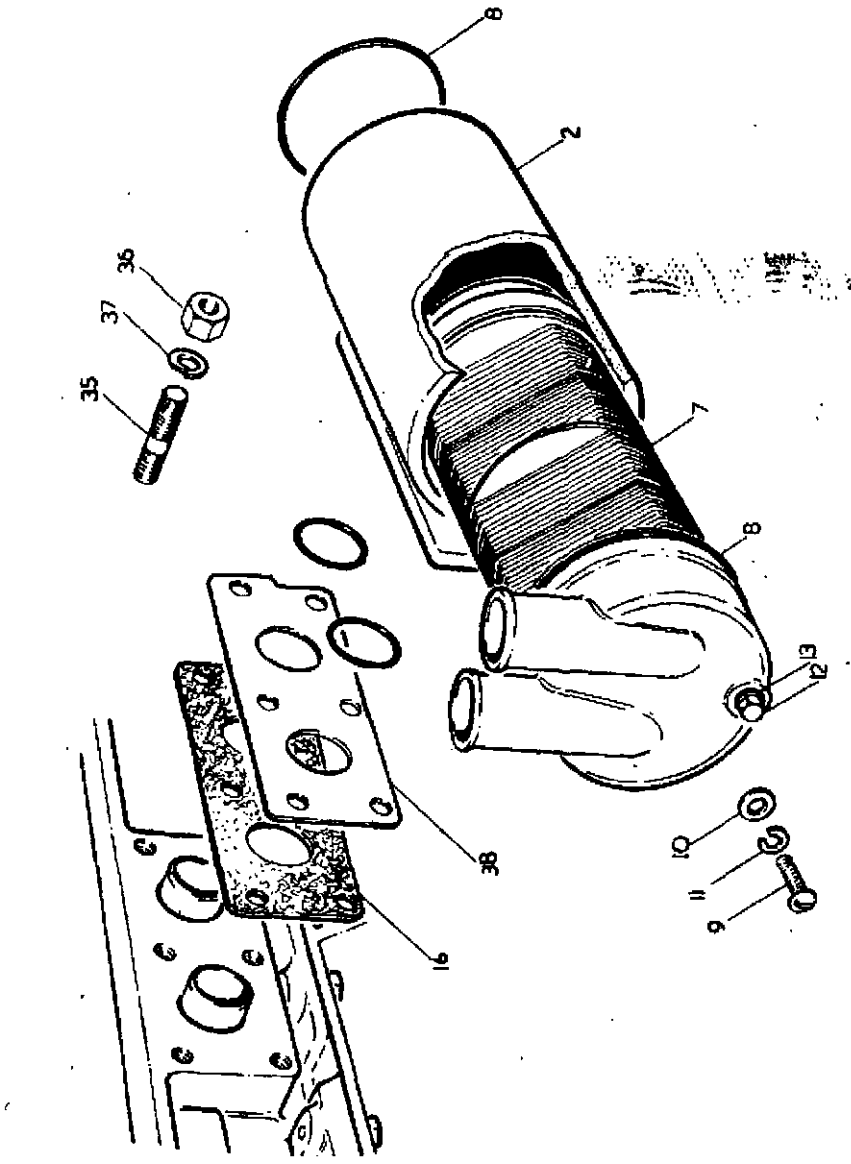


PLATE G2
V8.510 LUBRICATING OIL COOLER SECTION

CPO 2274

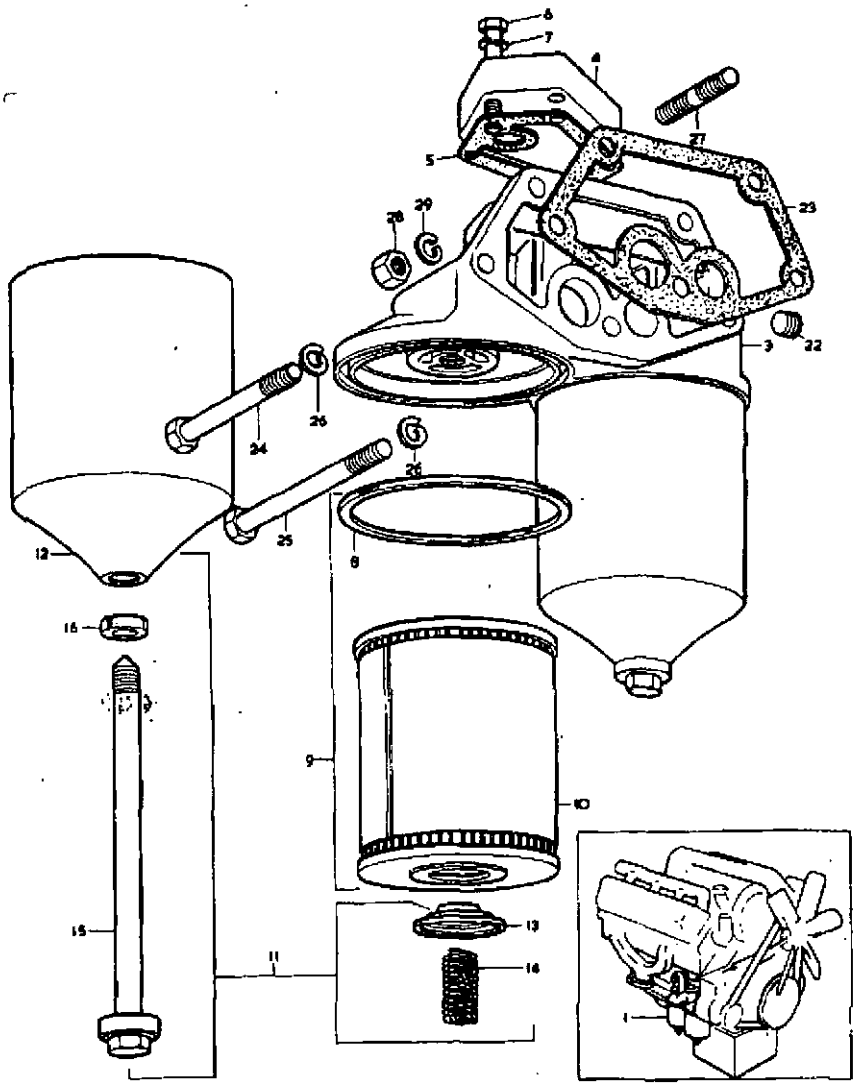


PLATE G3
V8.510 LUBRICATING OIL FILTER SECTION

CPO 2275

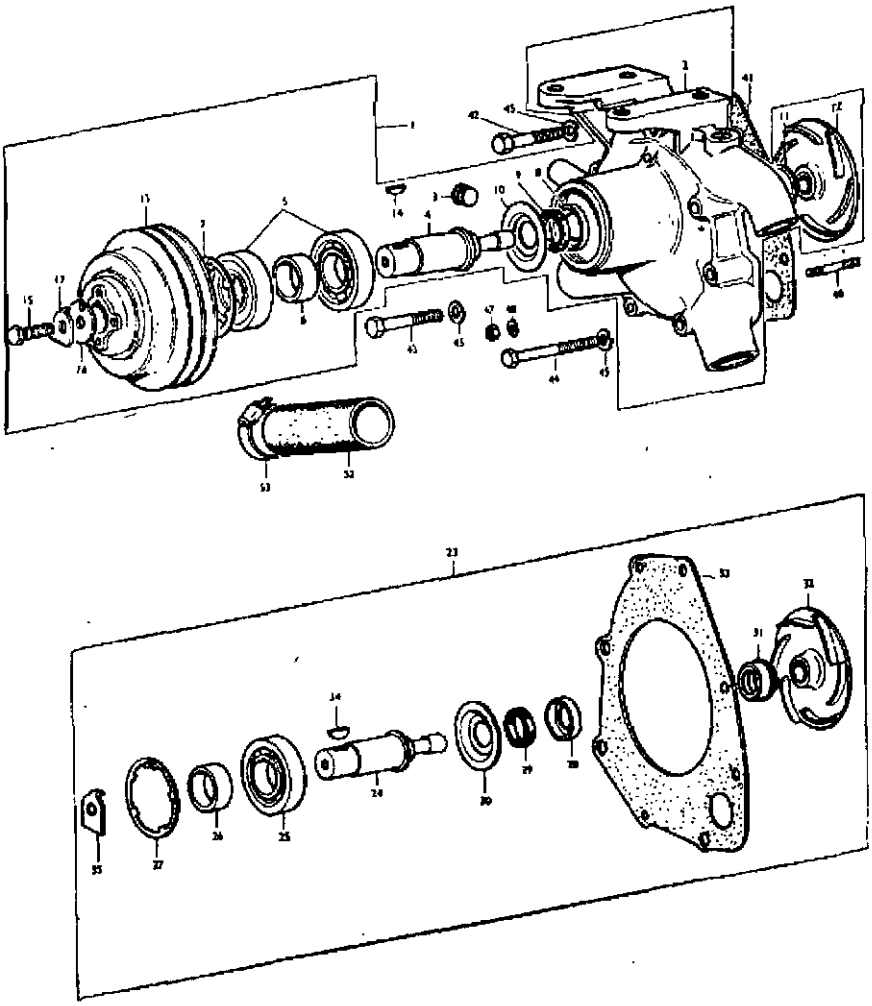


PLATE H
V8.510 WATER PUMP SECTION

CPO 2277

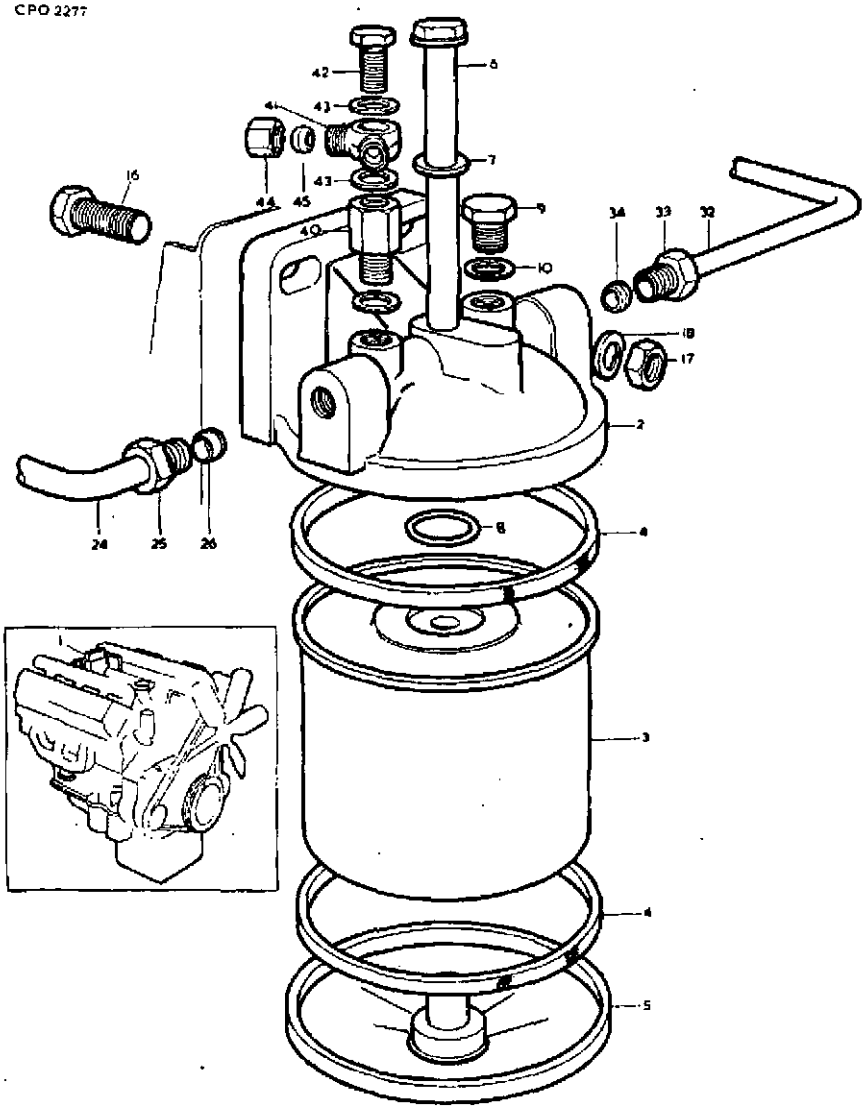


PLATE J1
V8.510 FUEL OIL FILTER SECTION

CPO 2278

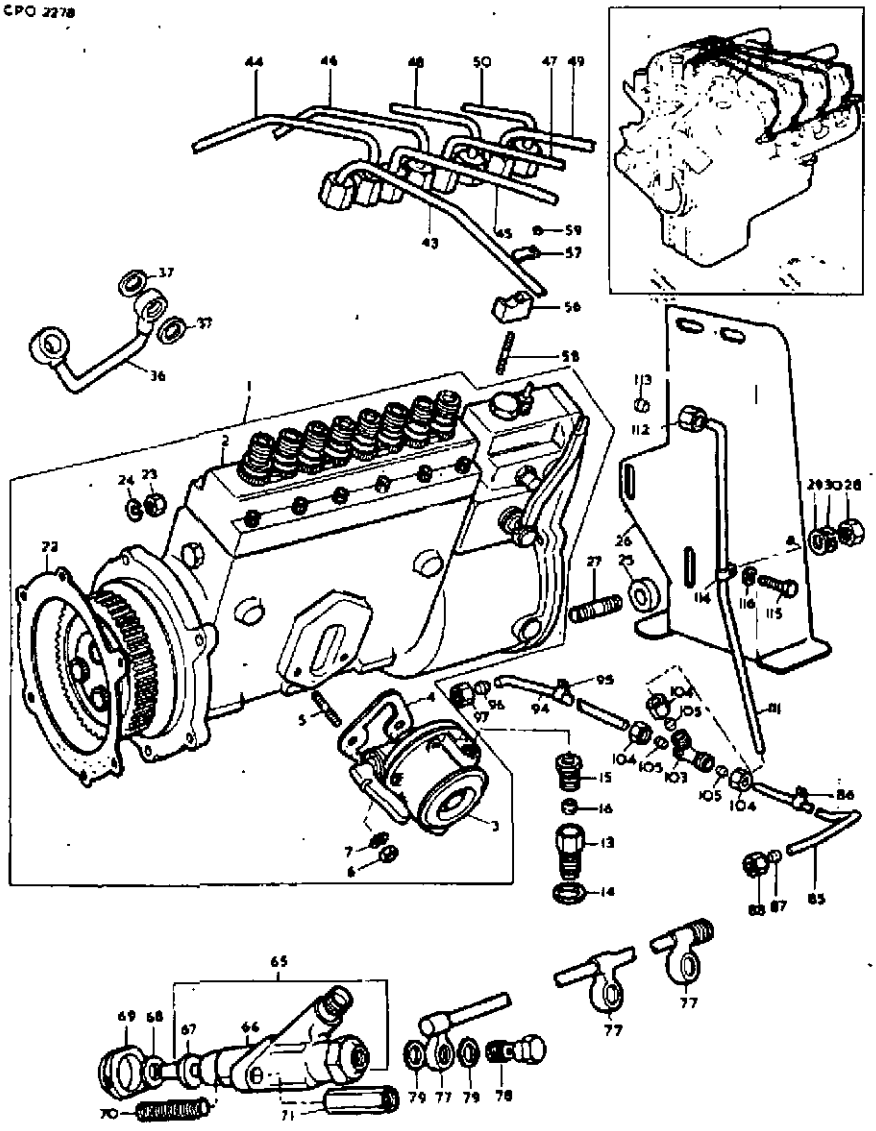


PLATE J2
V8.510 FUEL INJECTION EQUIPMENT SECTION

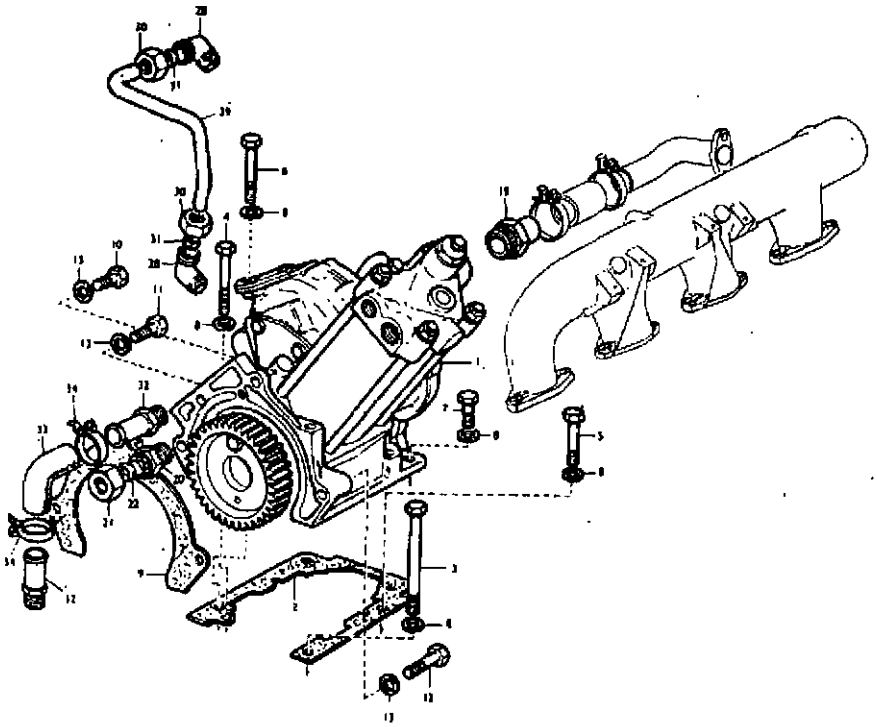


PLATE K1
V8.510 COMPRESSOR/AUXILIARY DRIVE INSTALLATION SECTION

CPO 2280

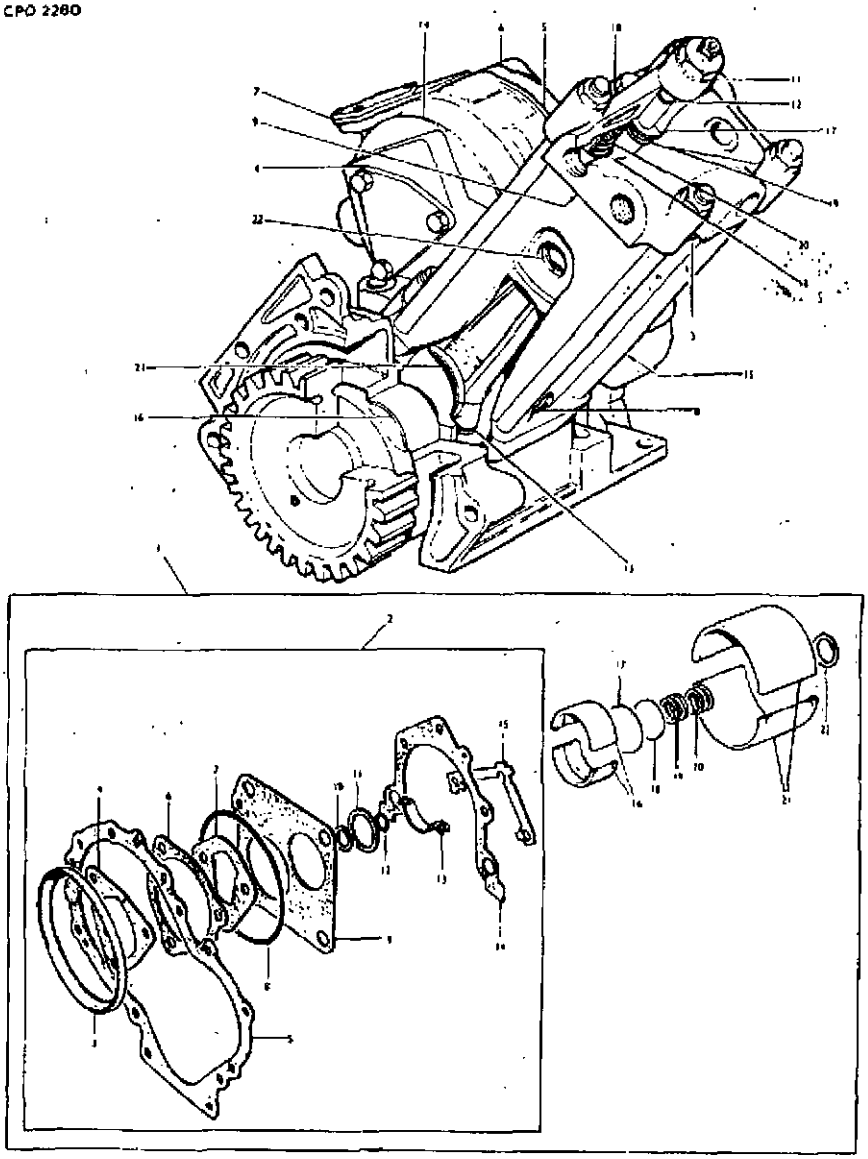


PLATE K2
V8.510 COMPRESSOR/AUXILIARY DRIVE SECTION

EXAMPLES OF SERVICE FACILITIES

Service Instruction

Perkins Engines, Inc.
24175 Research Drive
P.O. Box 283 • Farmington, Michigan 48024 • U.S.A.
Tel. (313) 477-3900 • Telex: 023-5300

SERVICE LITERATURE

The following additional service literature may be purchased through your local U.K. Industrial or overseas distributor.

Workshop Manuals

Workshop Data

Operators Handbooks

Turbocharger Service Instructions

Crankshaft Regrinding

Valve Seat Inserting and Cylinder Head Skimming

Fault Finding Guide

Installation and Maintenance Guide for Static Standby Engines

Etcetera