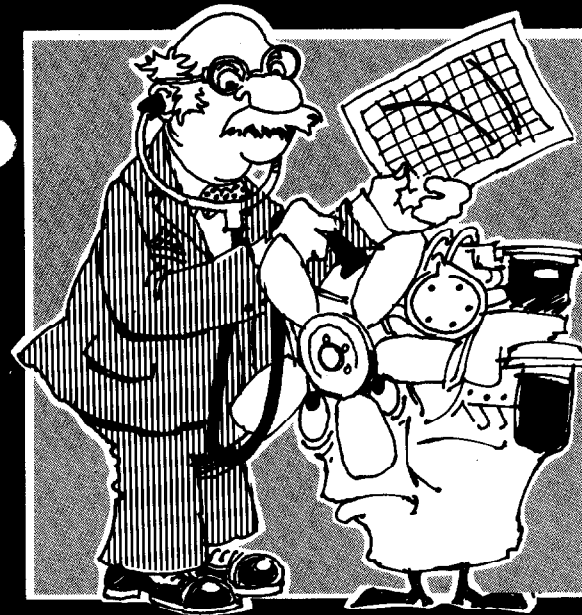


Perkins **POWER SERVICE**

Fault Finding Guide for Diesel Engines

Perkins
**POWER
SERVICE**



All information in this guide is substantially correct at the time of printing but may be altered subsequently by the Company.

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POWER

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POWER

Perkins Engines Limited,
Peterborough PE1 5NA, England

**Fault Finding Guide
for
Diesel Engines**

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Cables: 'Perkoil' Portichetto.

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U.S.A.

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P.O. Box 697, Wayne, Michigan 48184, U.S.A.
Telephone: 313 595 9600. Telex: 23-4002.
Cables: Perkeng Wane.

In addition to the above, there are Perkins distributors in most countries. Perkins Engines Ltd., Peterborough or one of the above companies can give details.

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INTRODUCTION

This Fault Finding Guide should assist in the identifying of the probable cause of the problems which can occur. Having identified the problem, a remedy can be applied.

The relevant Workshop Manual should be consulted for any required detail.

The fuel injection equipment fitted to diesel engines is manufactured to extremely tight tolerances and cannot tolerate the ingress of any dirt particles. Therefore, if the fuel injection equipment, such as the lift pump, the fuel injection pump or the atomisers are suspect, then the equipment should be removed from the engine to the specialised fuel injection equipment workshop for testing and repair, or new replacement components fitted.

WARNING

Removal of the seals, or the breaking of the seals, on fuel injection pumps, will render any warranty claim on an engine, null and void.

Before commencing any work on a Perkins engine, ensure that you understand what the complaint is. For example, if the user complains that the engine is knocking, can you hear the knock which is being complained about.

If it becomes necessary to use new parts, ensure that the parts you use are genuine Perkins Parts. Your authorised Perkins parts counter will supply the proper part against the Perkins engine serial number.

STARTING PROBLEMS

LOW CRANKING SPEED



p.6

COLD ENGINE WILL NOT START



p.8

ENGINE IS DIFFICULT TO START



p.10

ENGINE STARTS AND STOPS



p.12

ENGINE WILL NOT START
COLD OR HOT



p.14

LOW CRANKING SPEED

INCORRECT GRADE OF LUBRICATING OIL

Check with the user or his supplier that the oil brand and viscosity is in accordance with the approved list. See the relevant Service Literature.

BATTERY CAPACITY LOW (VOLTAGE)

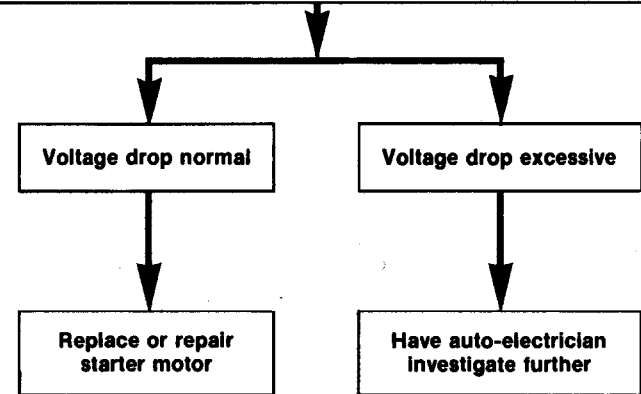
Ensure that the battery is to the manufacturer's specification. Check the battery capacity and replace if necessary.

BAD ELECTRICAL CONNECTIONS BETWEEN BATTERY, STARTER MOTOR AND EARTH

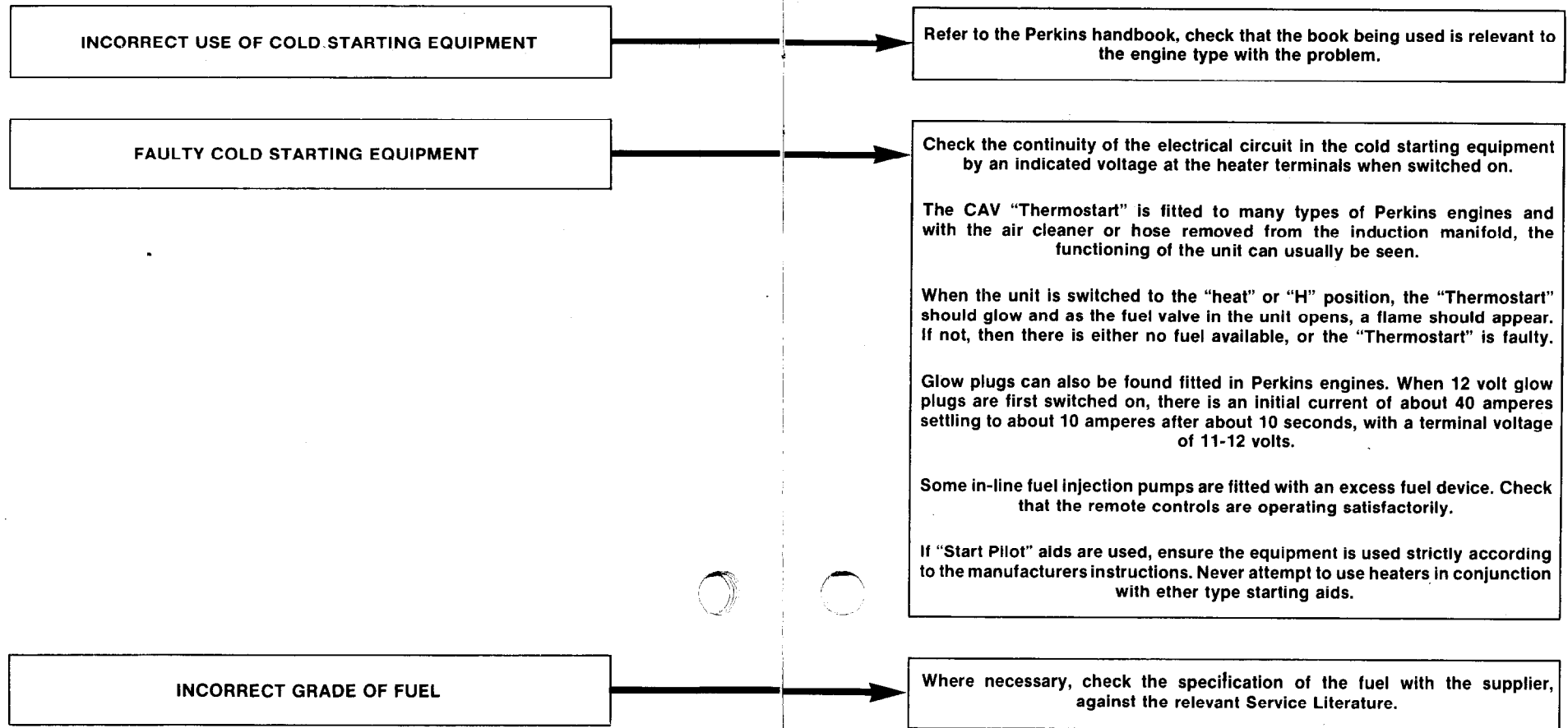
Check for corroded or loose connections. Clean, tighten or remake connections as necessary using the correct cable specification.

FAULTY STARTER MOTOR

Check the voltage drop at the starter motor with the starter switched on. Check with the manufacturer's specification.



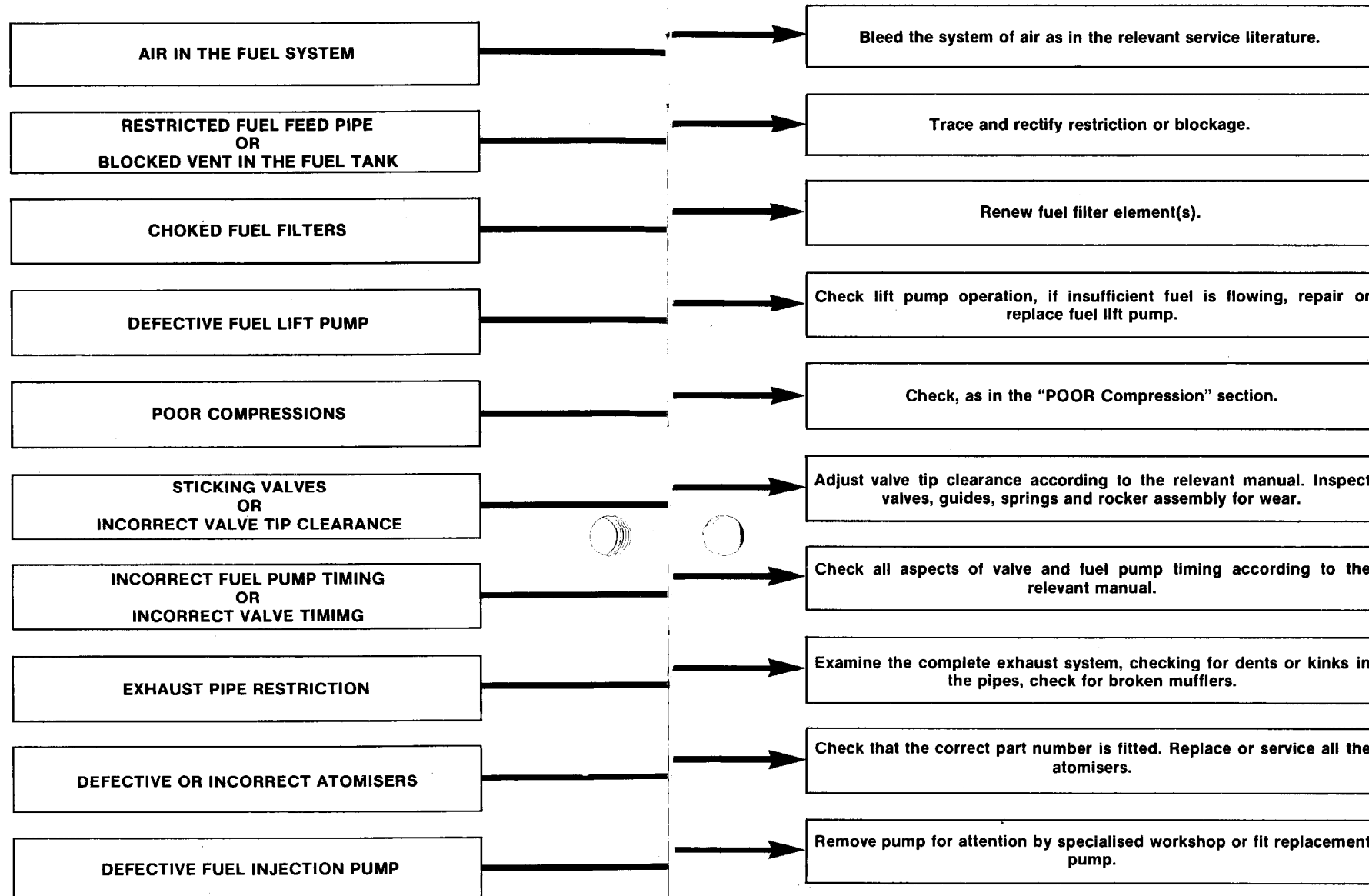
COLD ENGINE WILL NOT START



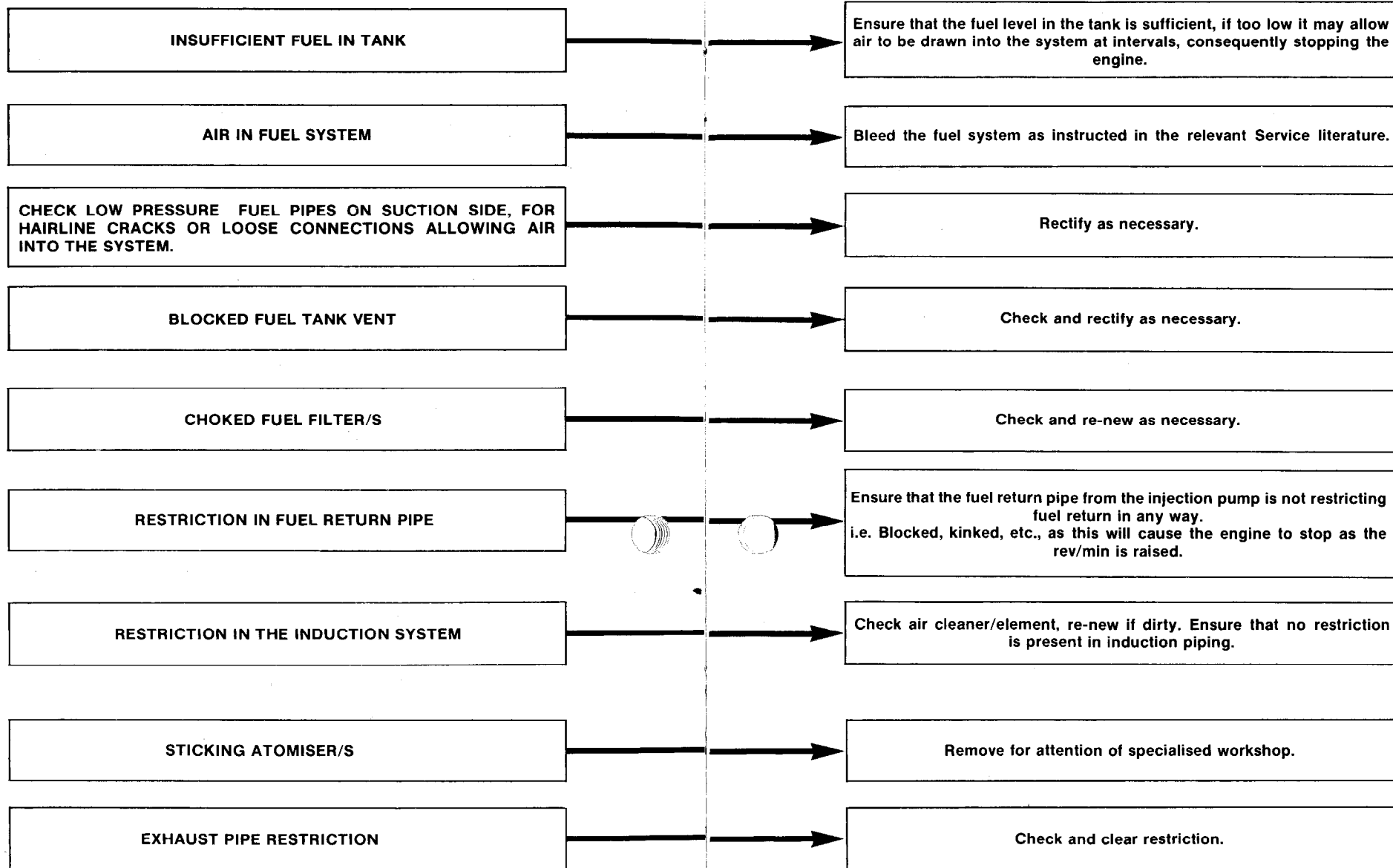
See sections
"LOW CRANKING SPEEDS" on page 6
"ENGINE IS DIFFICULT TO START" on page 10
"ENGINE WILL NOT START" on page 14

ENGINE IS DIFFICULT TO START

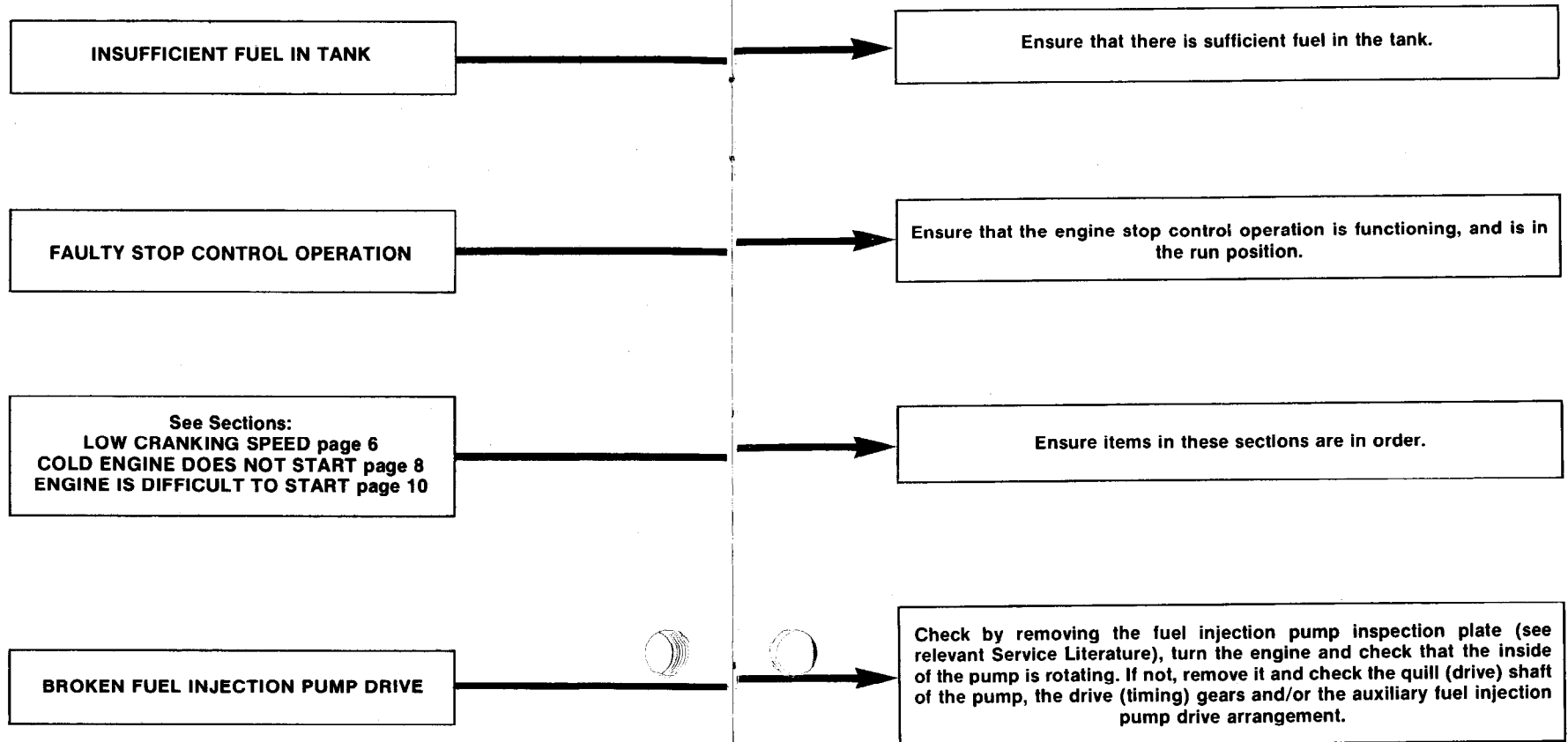
Assuming that the problems
LOW CRANKING SPEED
and
COLD ENGINE WILL NOT START
have been resolved, proceed as follows:



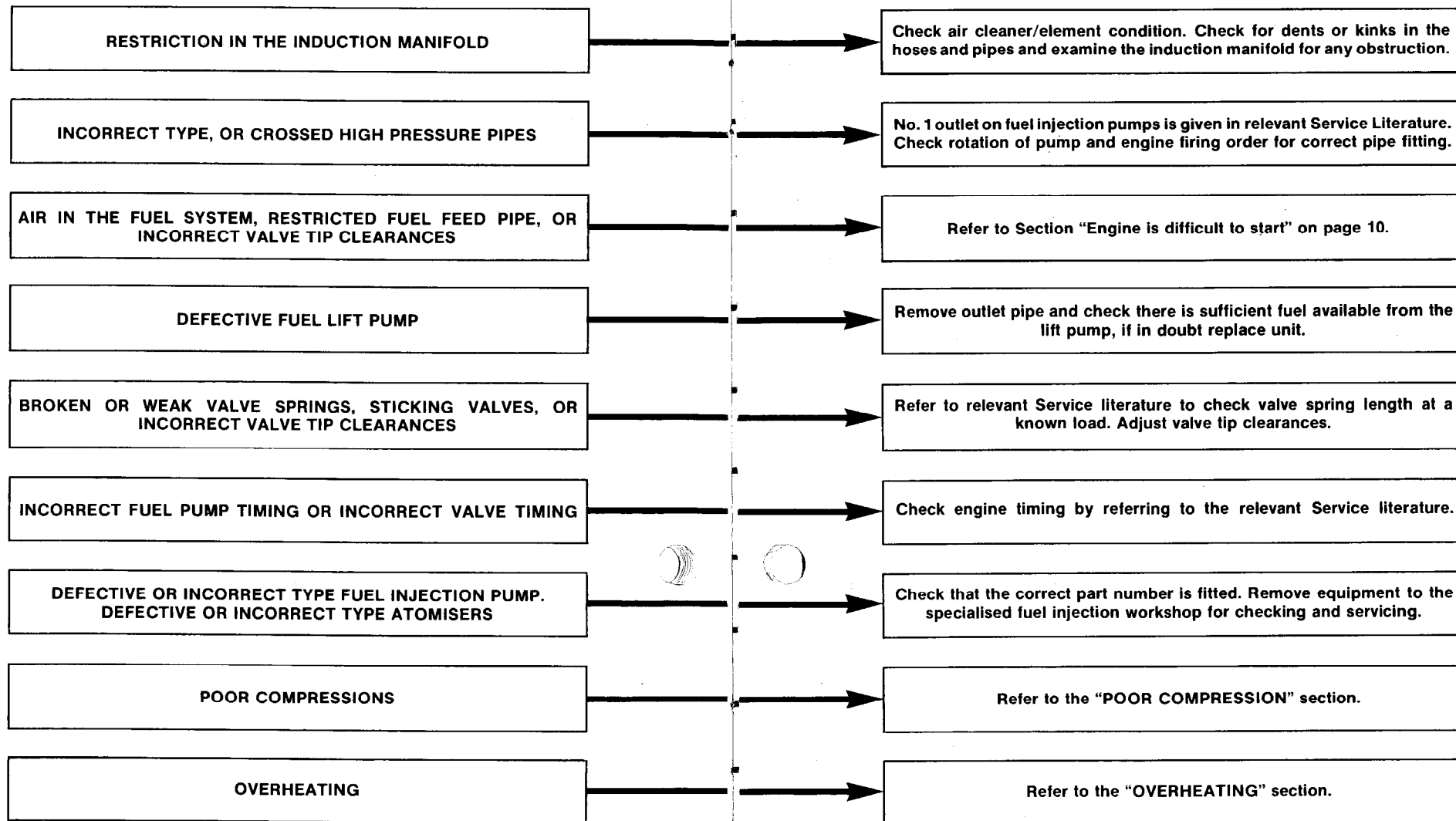
ENGINE STARTS AND STOPS



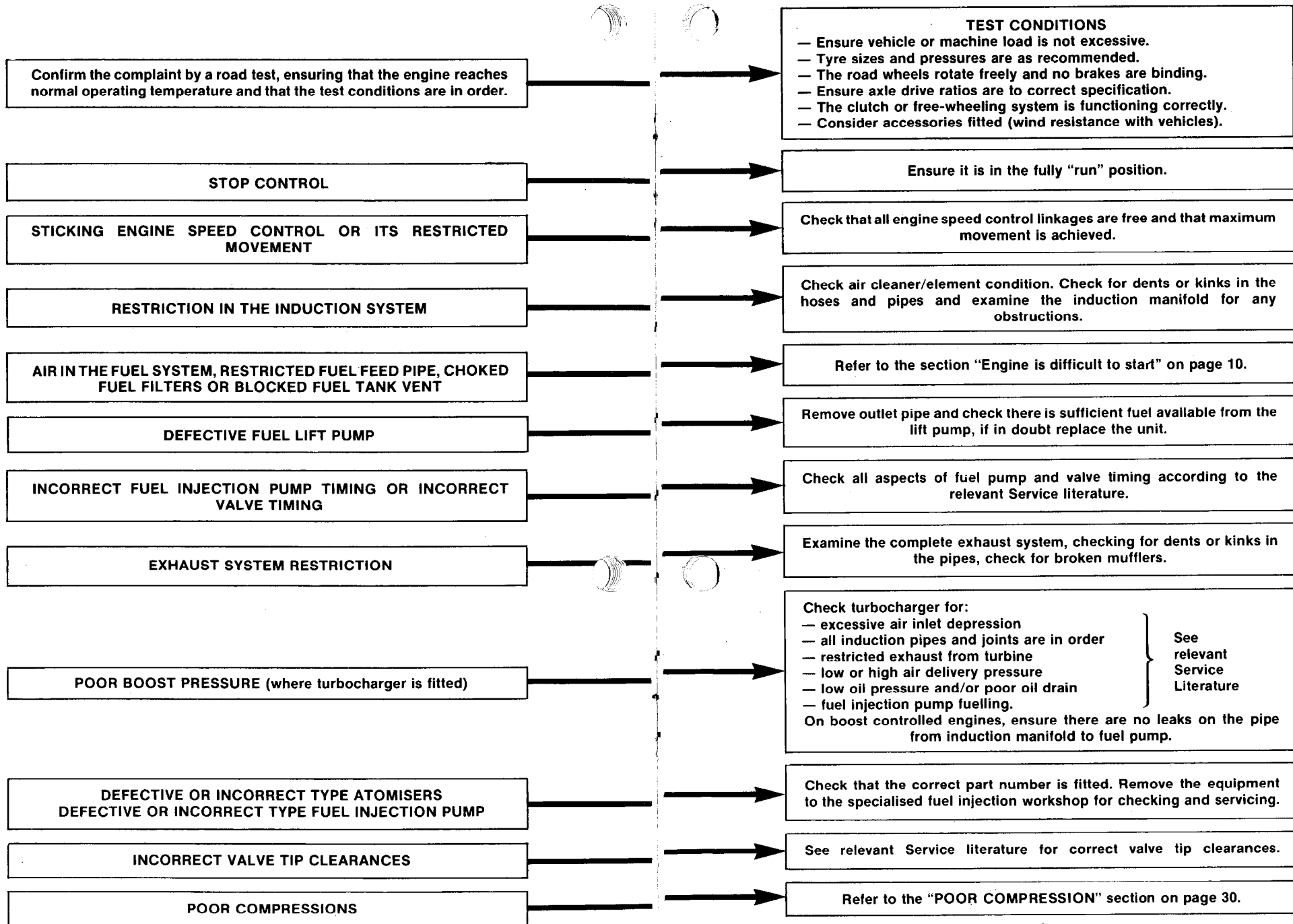
ENGINE WILL NOT START



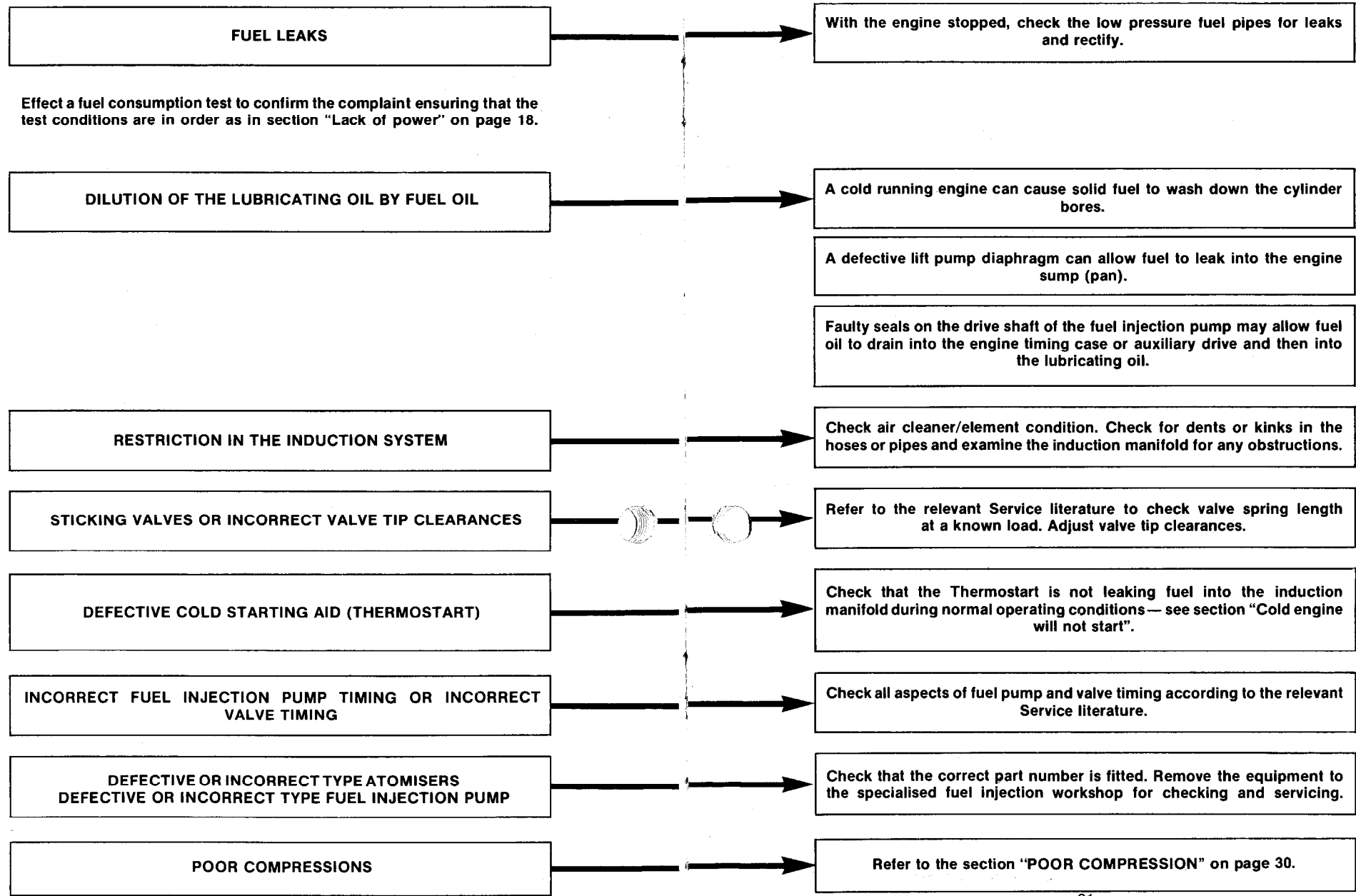
ENGINE MISFIRES



LACK OF POWER



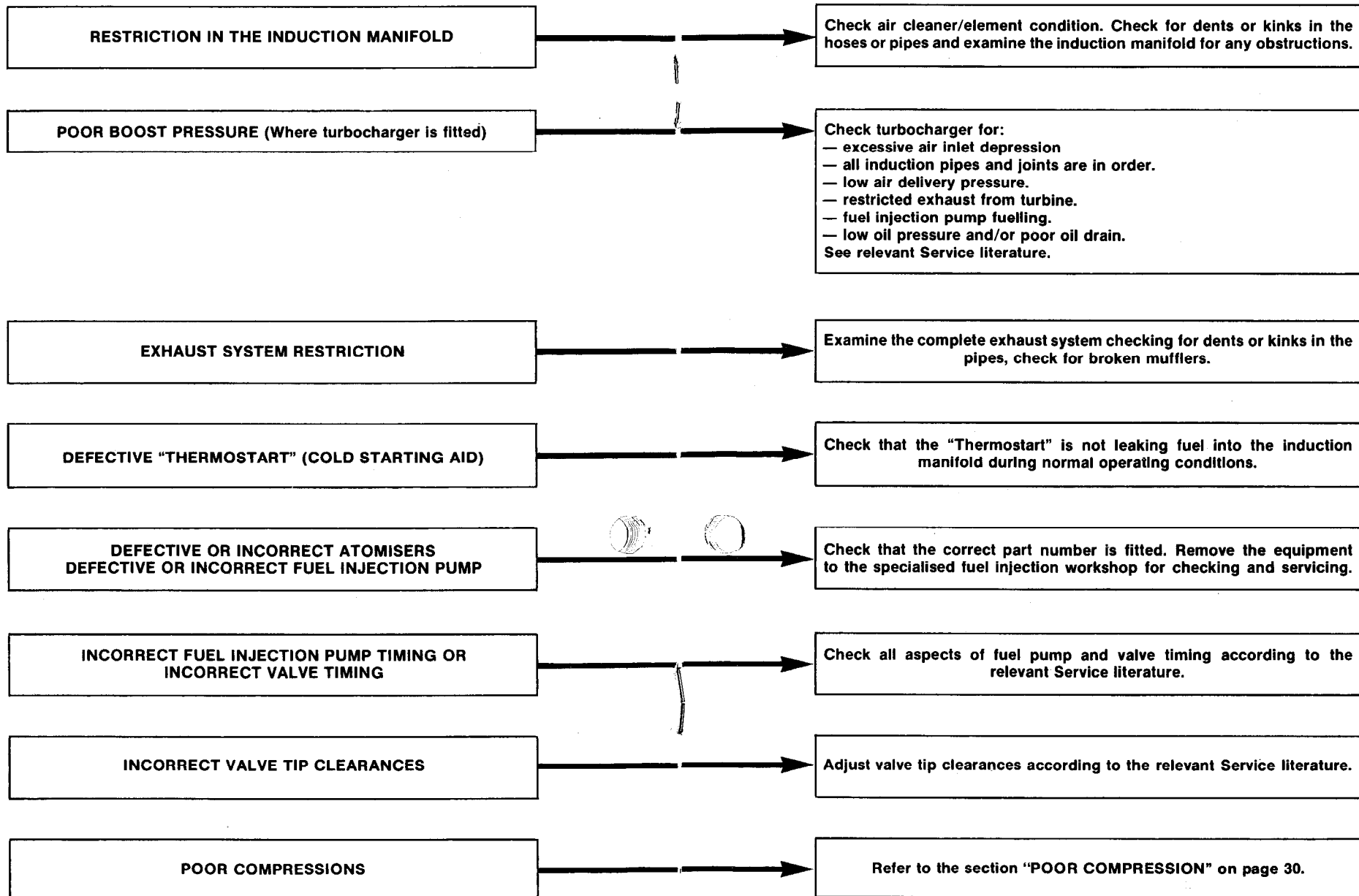
EXCESSIVE FUEL CONSUMPTION



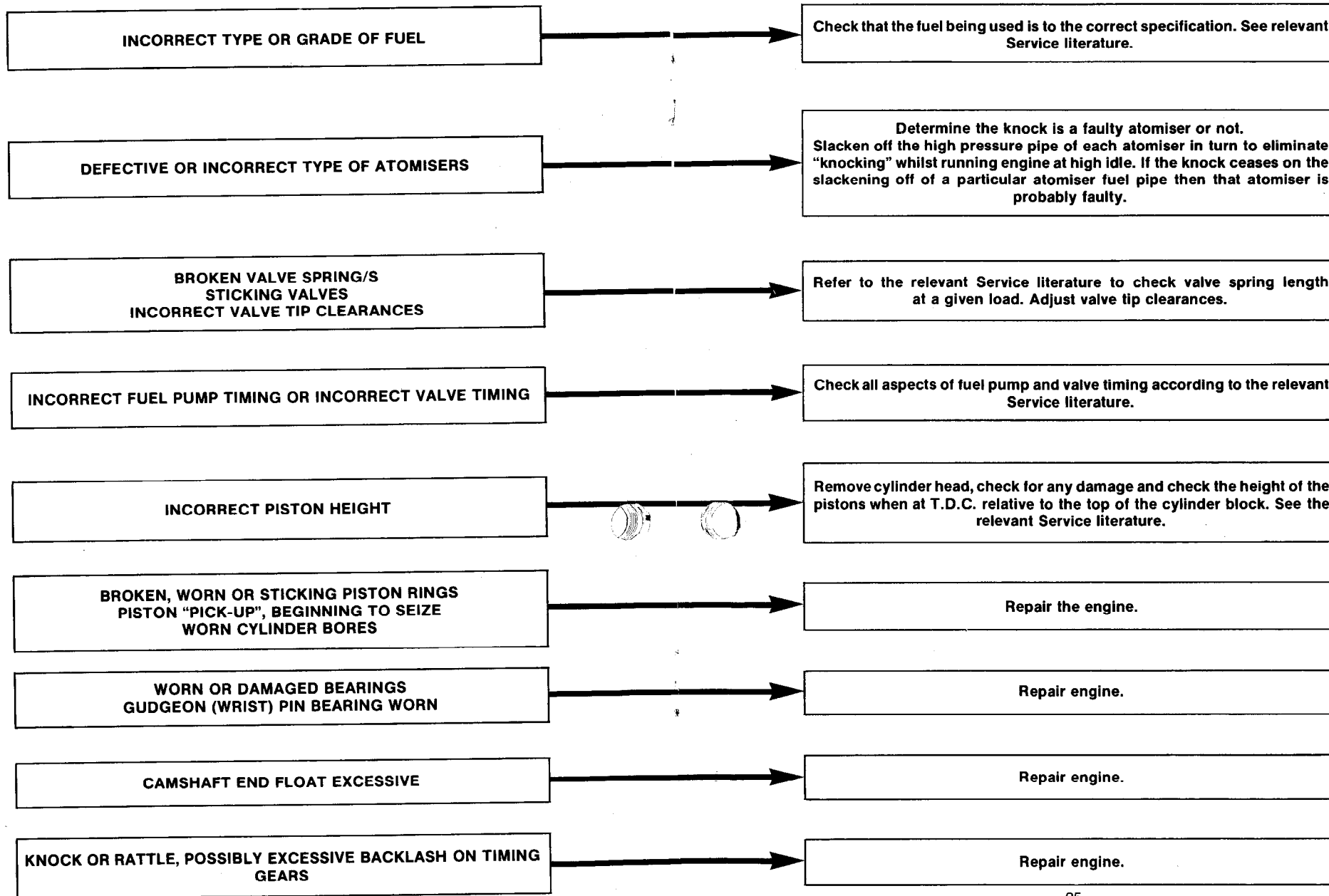
Effect a fuel consumption test to confirm the complaint ensuring that the test conditions are in order as in section "Lack of power" on page 18.

BLACK EXHAUST

Confirm the complaint by a road test, ensuring that the engine reaches normal operating temperature and that the test conditions are in order as in the section "Lack of power" on page 18.

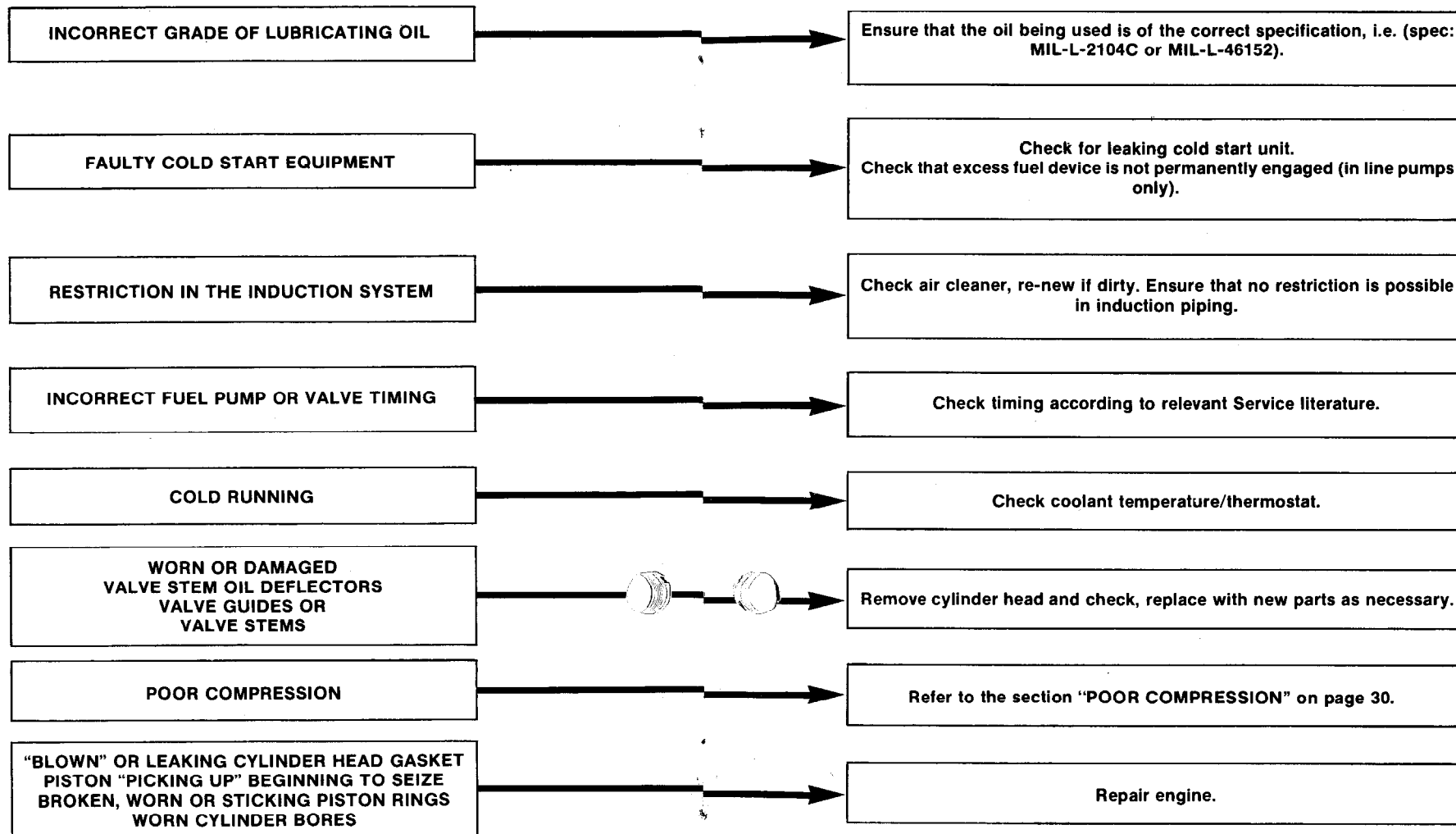


ENGINE KNOCKING

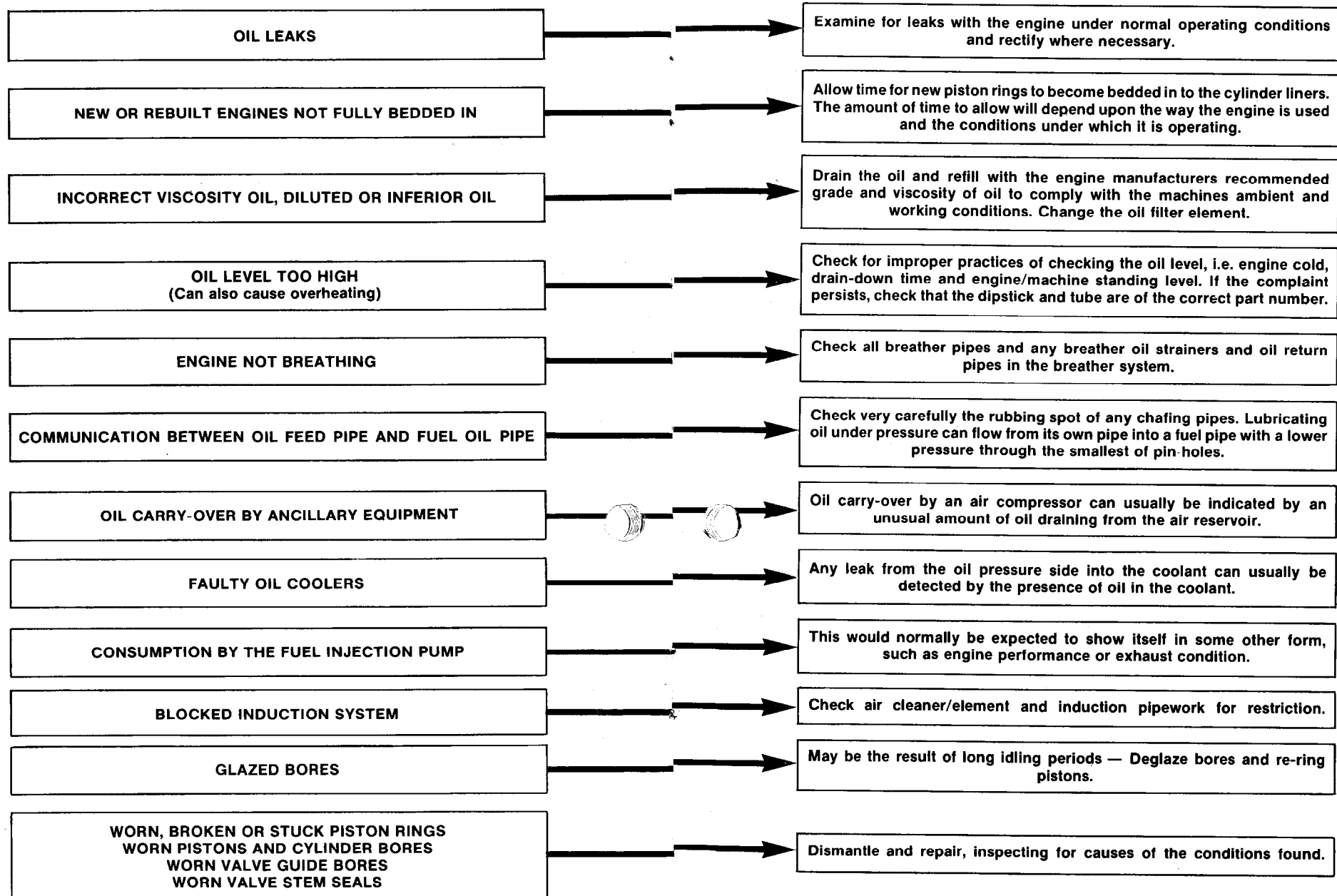


BLUE/WHITE EXHAUST

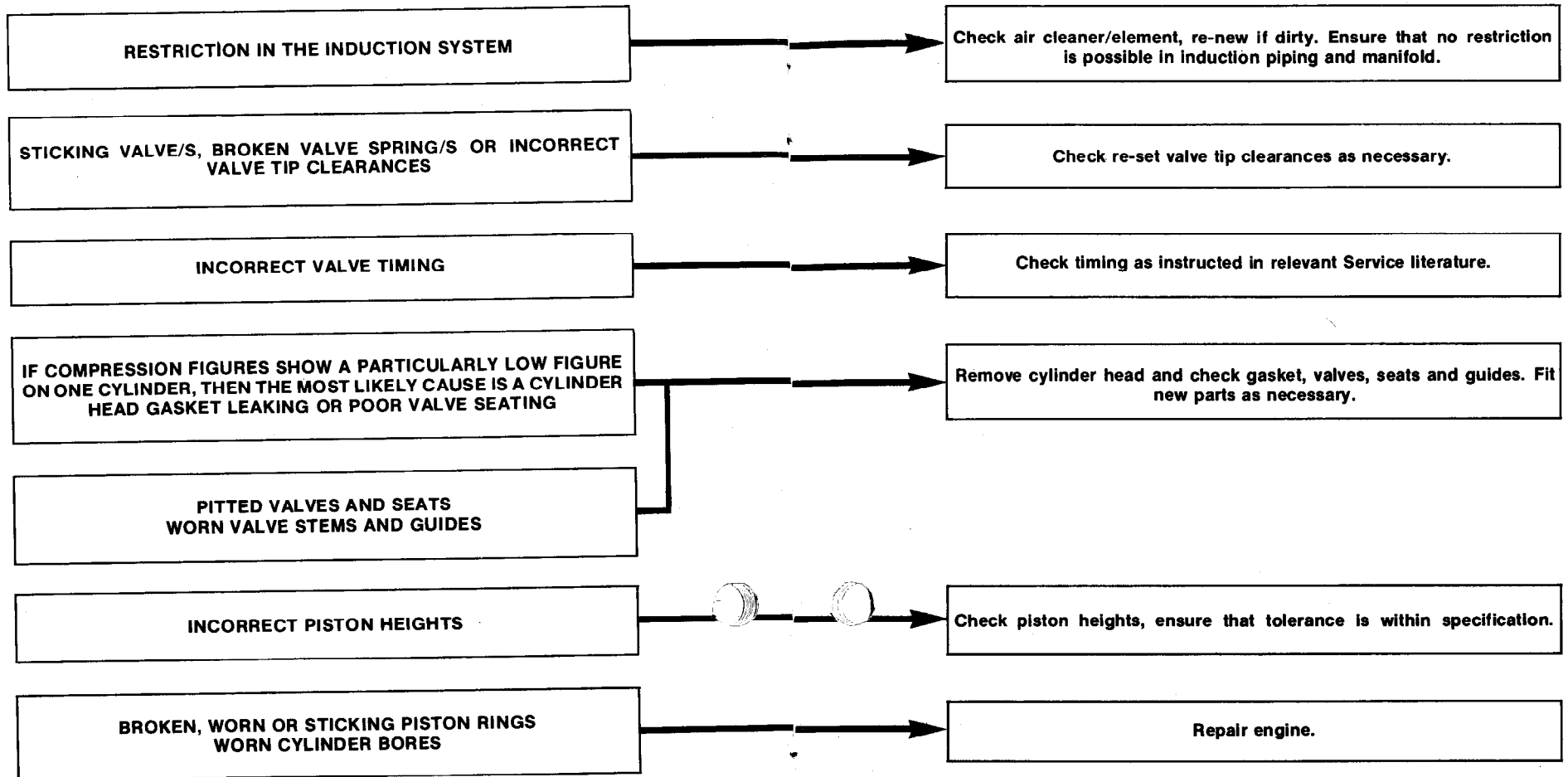
NOTE
CONFIRM COMPLAINT BY ROAD TEST, ENSURING ENGINE REACHES NORMAL OPERATING TEMPERATURE



EXCESSIVE LUBRICATING OIL CONSUMPTION

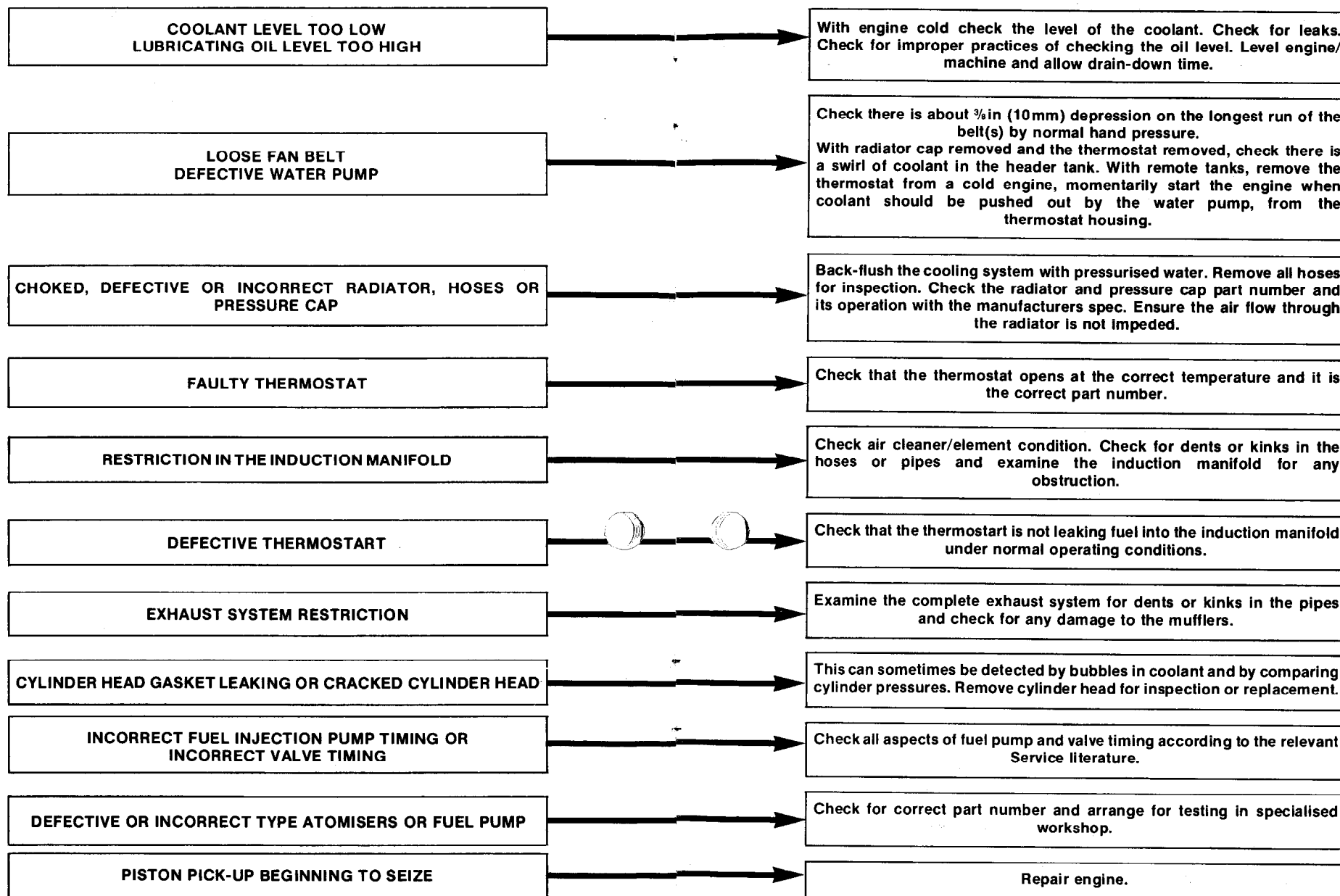


POOR COMPRESSION



OVERHEATING

Check that the machine or vehicle is not being overloaded.
Check that any temperature gauge fitted to the machine is not faulty, by removing the radiator pressure cap, run the engine until coolant warms up and using a thermometer in the radiator compare its reading to that of the gauge fitted to the machine.



EXCESSIVE CRANKCASE PRESSURE

NOTE
IT IS ASSUMED THAT ON A COMPLAINT OF THIS NATURE, OIL IS BEING BLOWN OUT EXTERNALLY, i.e. OUT OF DIPSTICK TUBE, ETC.

CHOKED BREATHER OR PIPE

Remove the engine breather and pipe and check for restriction. Rectify as necessary.

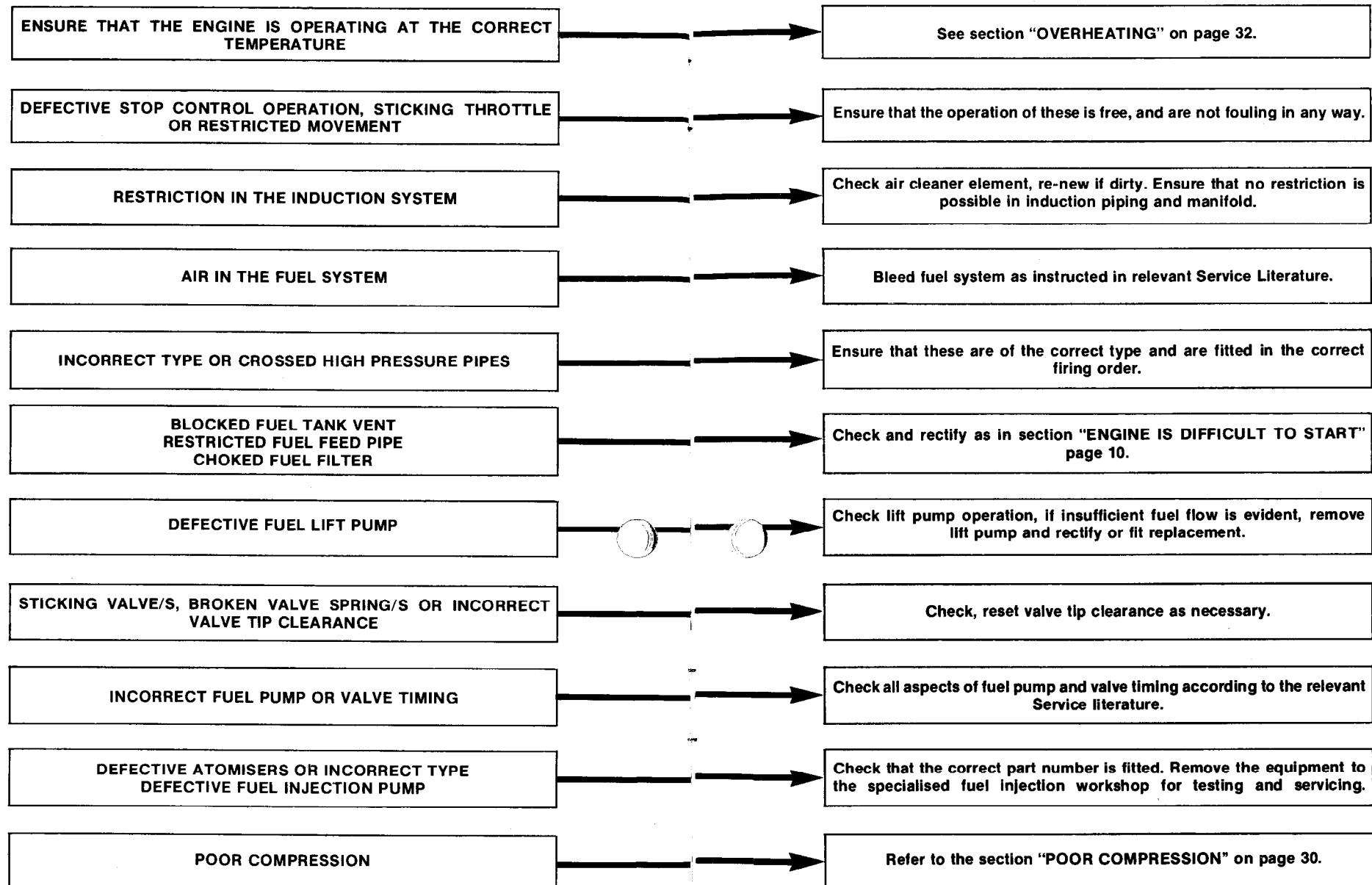
DEFECTIVE EXHAUSTER (if fitted)

Ensure that there are no leaks in the vacuum system or exhauster, as this would permit air to enter the engine causing crankcase pressure.

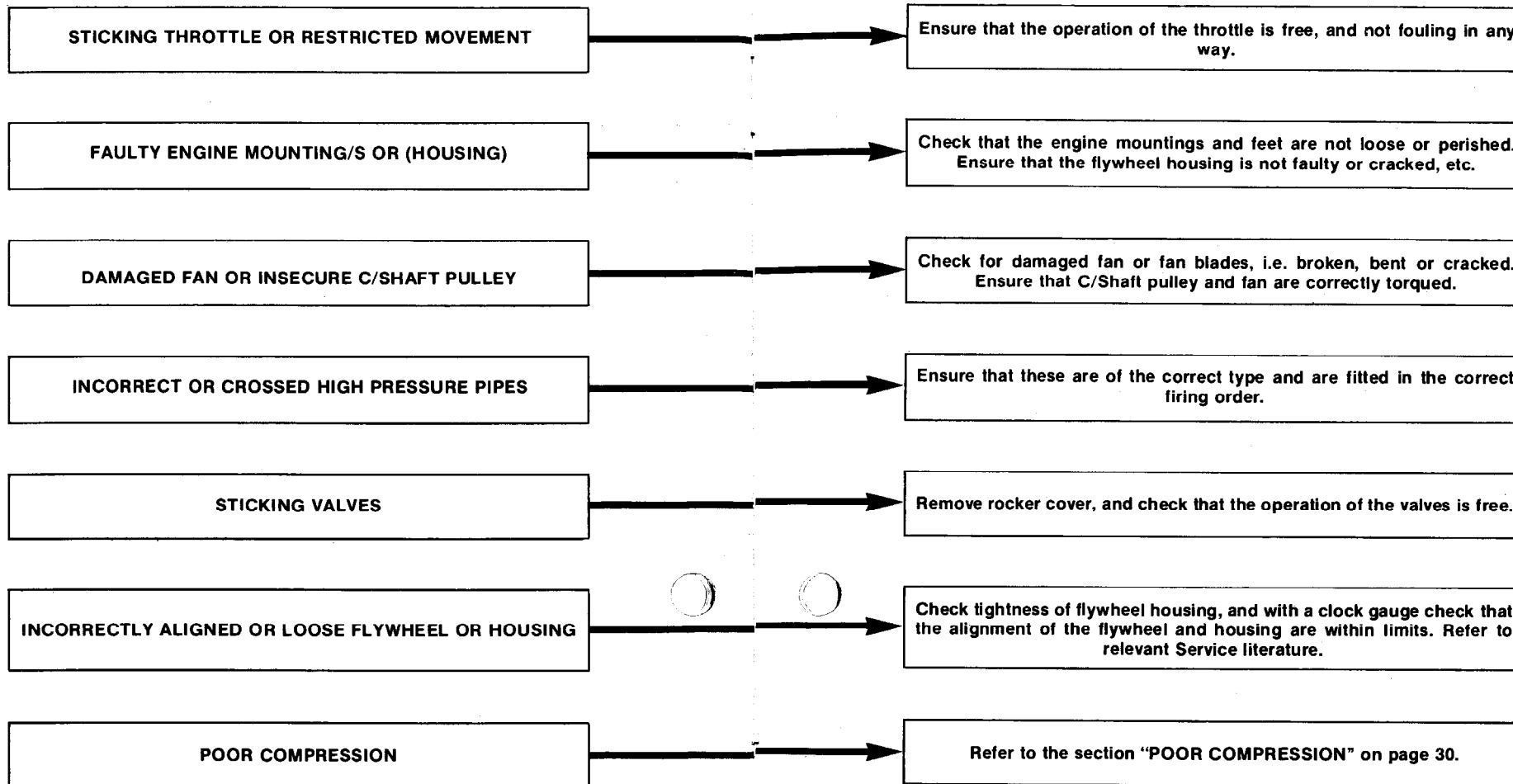
**PISTON PICK-UP BEGINNING TO SEIZE
WORN CYLINDER BORES
BROKEN, WORN OR STICKING PISTON RINGS
CYLINDER HEAD GASKET LEAKING**

Repair engine.

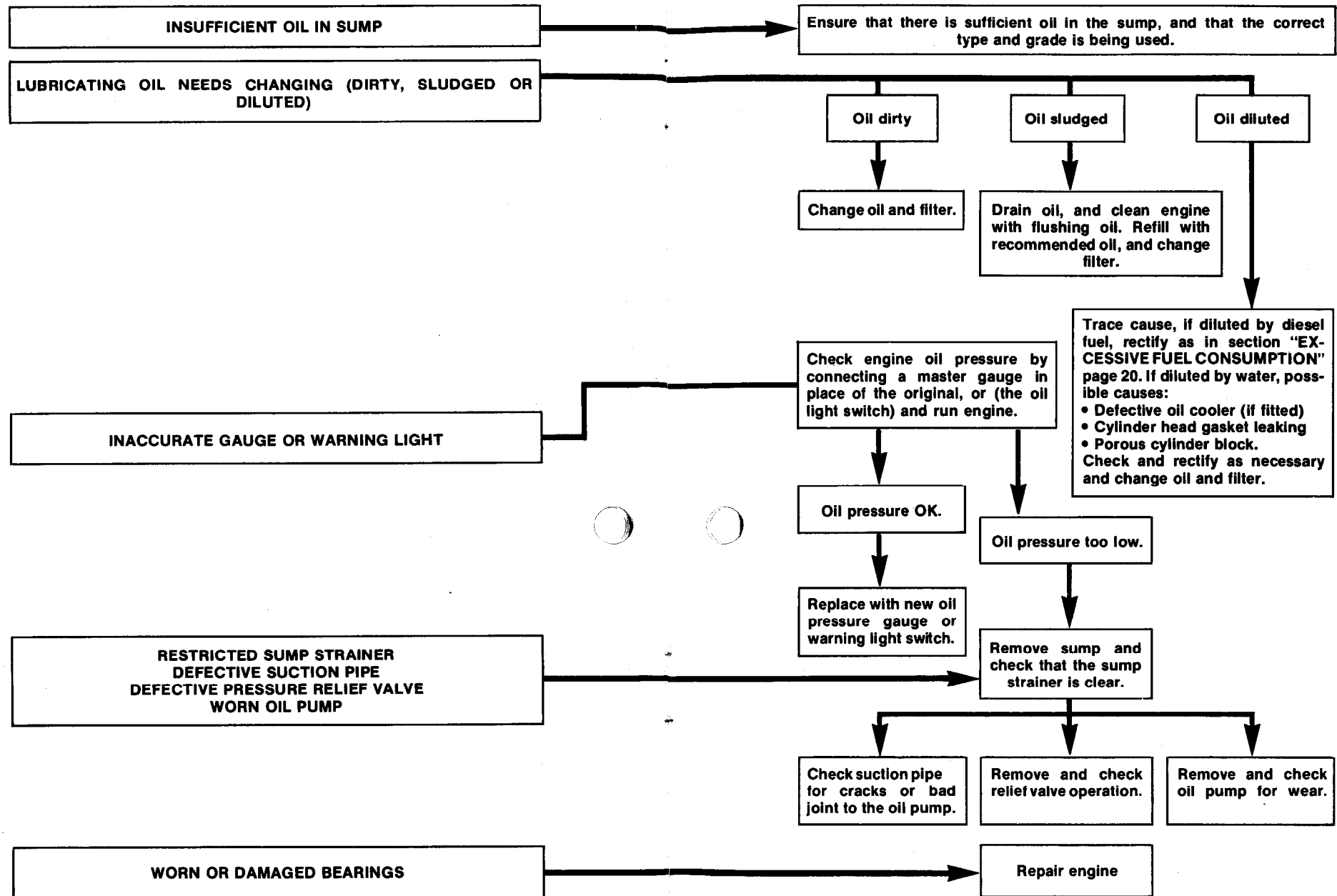
ERRATIC RUNNING



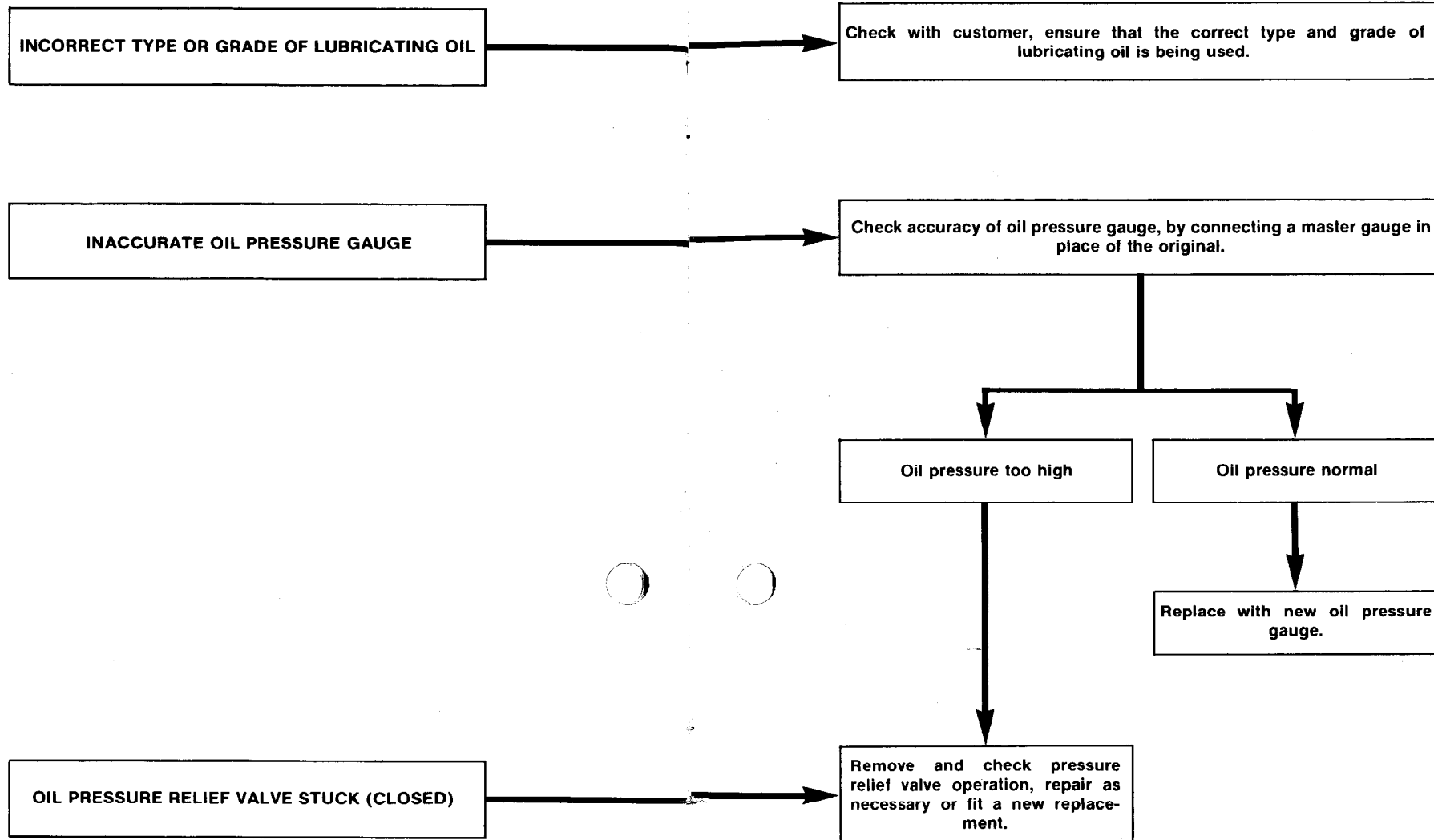
VIBRATION



LOW OIL PRESSURE



HIGH OIL PRESSURE



EXAMPLES OF SERVICES ASSISTANCE

Service

If any problems occur with your engine or the components fitted to it, your Perkins distributor can make the necessary repairs and will ensure that only the correct parts are fitted and that the work is done correctly.

Certain components can be supplied by your Perkins distributor through the Perkins Power Exchange system. These will enable you to reduce the cost of some repairs.

Extended warranty

The engine warranty period can be extended to two years. For details get in contact with your nearest Perkins distributor.

Service literature

Workshop manuals and other service publications are available from your Perkins distributor at a nominal cost.

Training

Local training on correct engine operation, overhaul and service is available at some Perkins distributors. If special training is needed, your Perkins distributor can give details of how to get this at the Product Education Department, Peterborough, or other main centres.