

# 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.

 **Perkins**  
 **POWER**

Perkins Engines Limited,  
Peterborough PE1 5NA, England

Printed in England by Warners (Midlands) Ltd., Bourne, Lincolnshire



 **Perkins**  
 **POWER**

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**Fault Finding Guide  
for  
Diesel Engines**

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## PERKINS COMPANIES

### AUSTRALIA

Perkins Engines Australia Pty. Ltd.,  
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Cables: 'Perkol' Melbourne.

### FRANCE

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Cables: 'Perkoil' Portichatto.

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8th Floor, Reinanzaka Building, 14-2 Akasaka, 1-chome,  
Minato-ku, Tokyo 107, Japan.  
Telephone: (03) 586 7377. Telex: J2424823 Perkoil J.

### U.S.A.

Perkins Engines Inc.,  
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Telephone: 313 695 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**

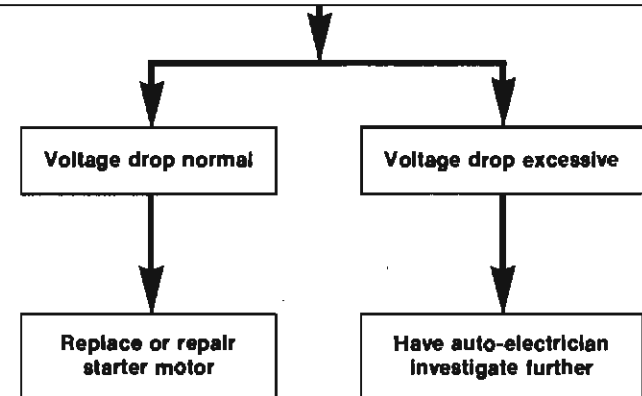


Check for corroded or loose connections. Clean, tighten or remake connections as necessary using the correct cable specification.

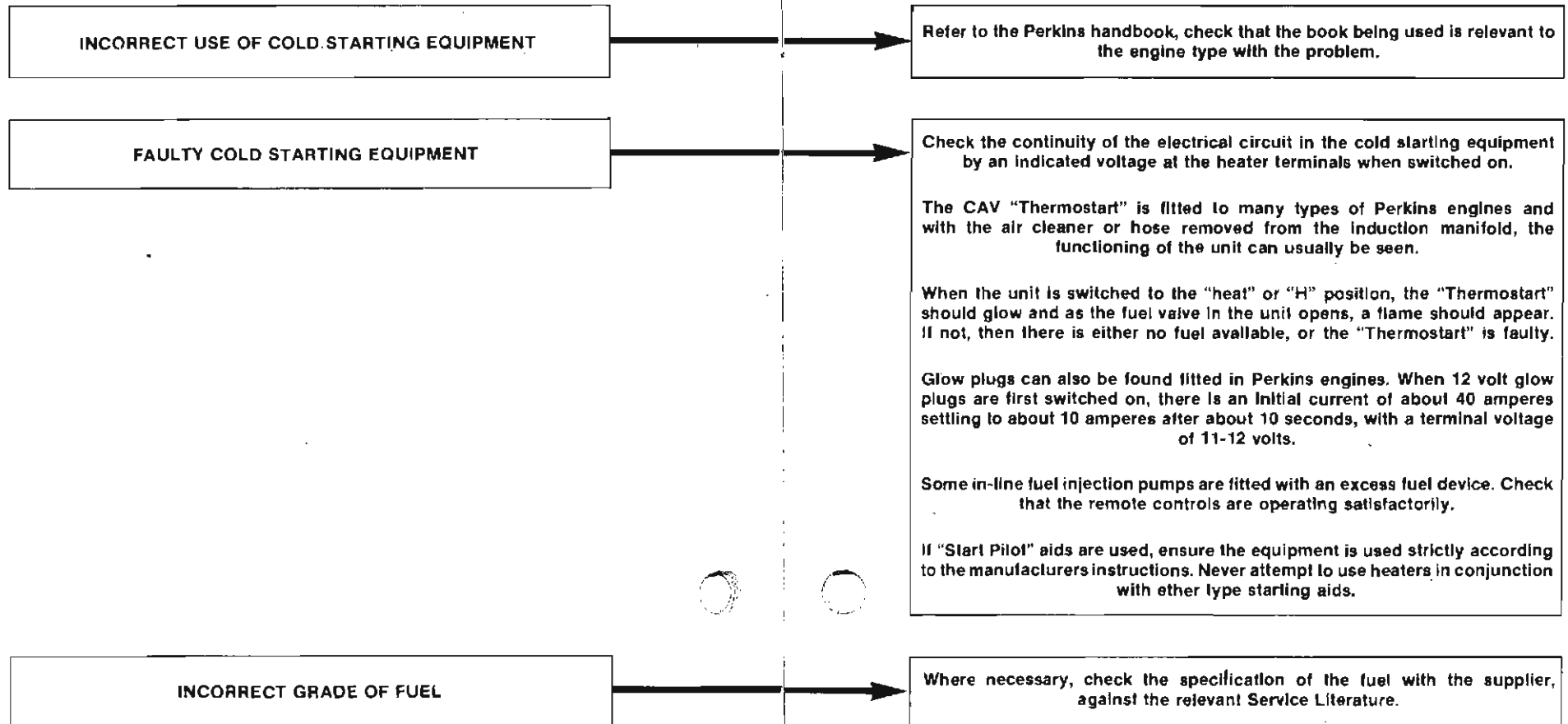
**FAULTY STARTER MOTOR**



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

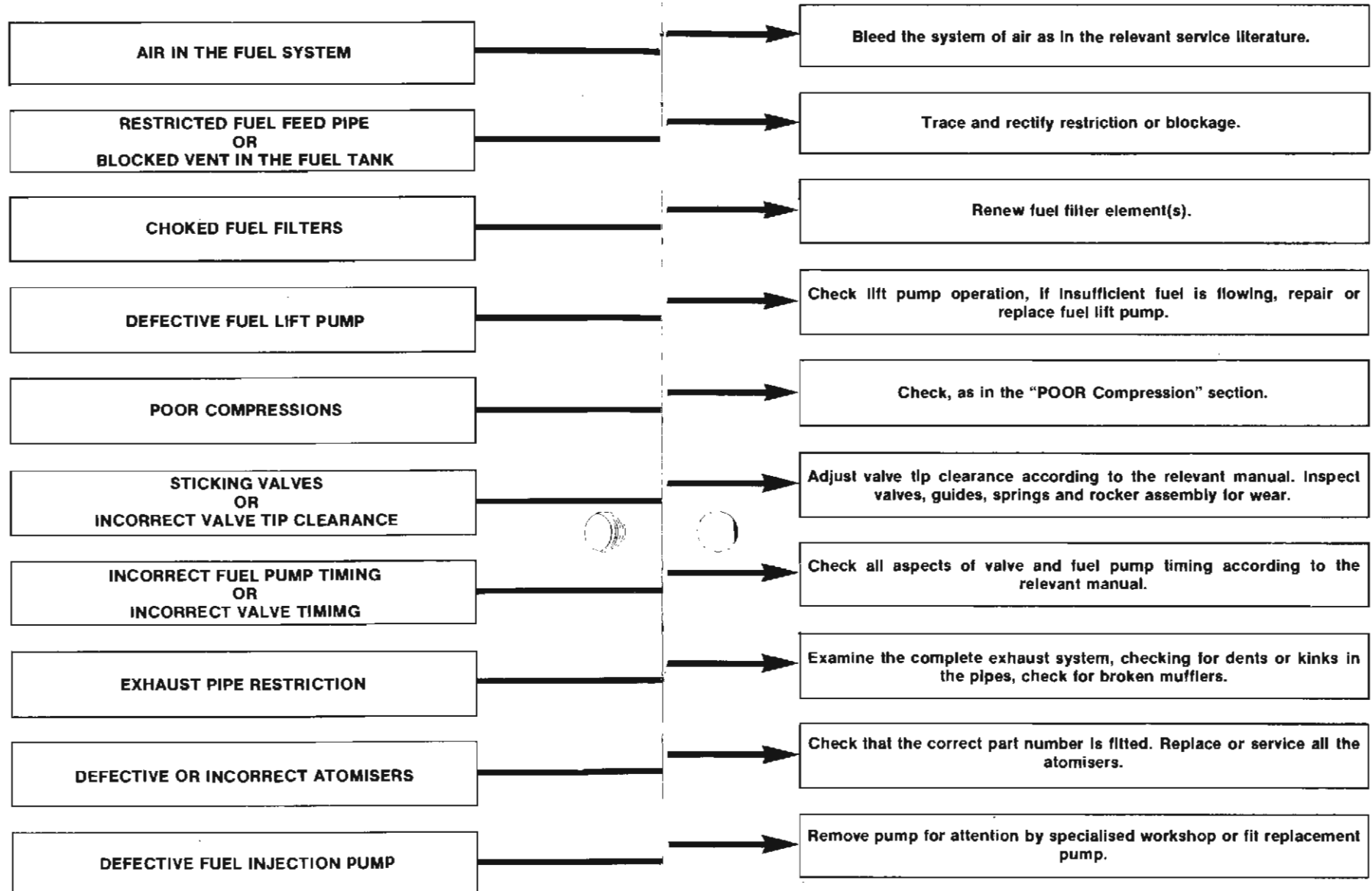


# COLD ENGINE WILL NOT START

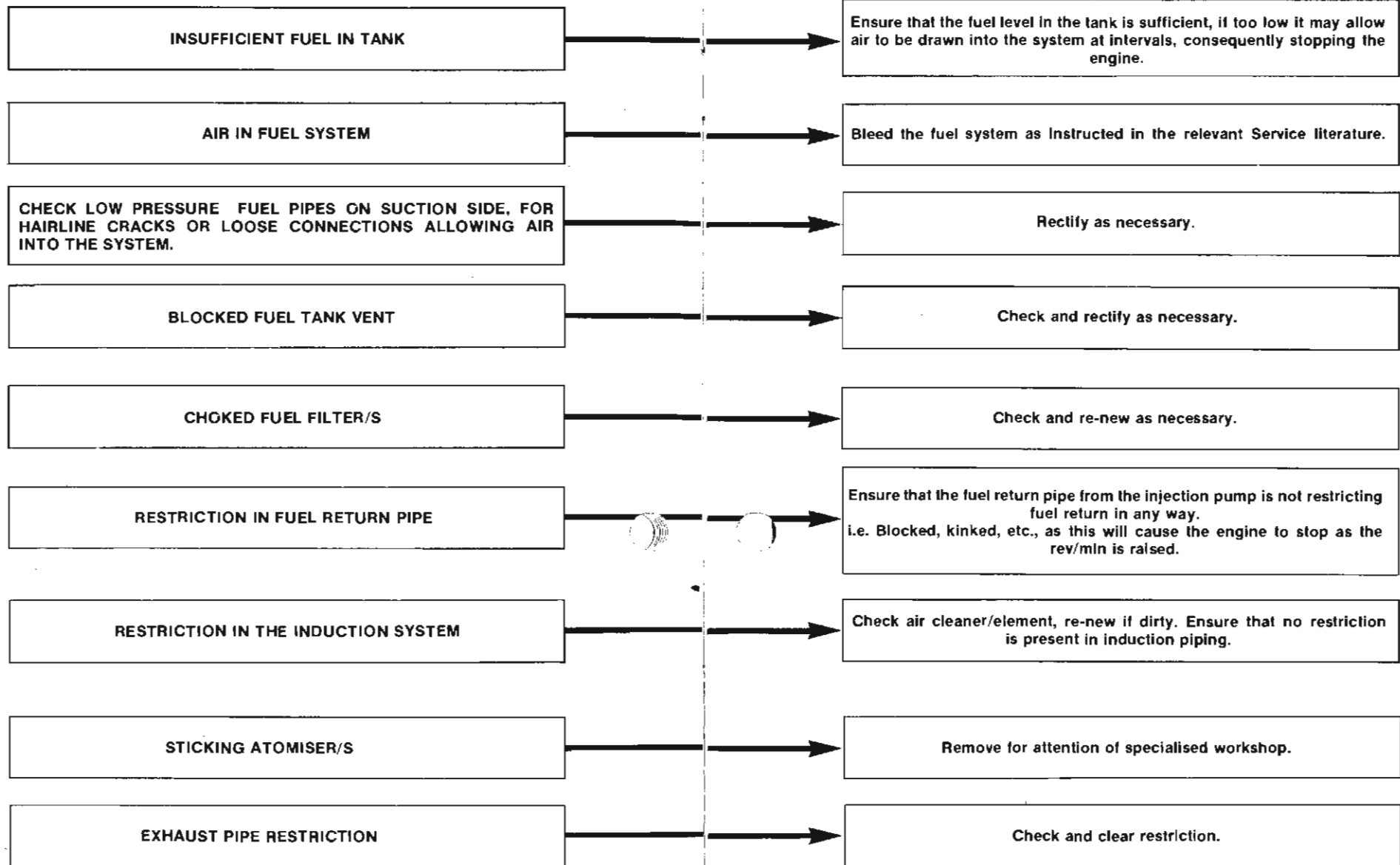


See sections  
"LOW CRANKING SPEEDS" on page 6  
"ENGINE IS DIFFICULT TO START" on page 10  
"ENGINE WILL NOT START" on page 14

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

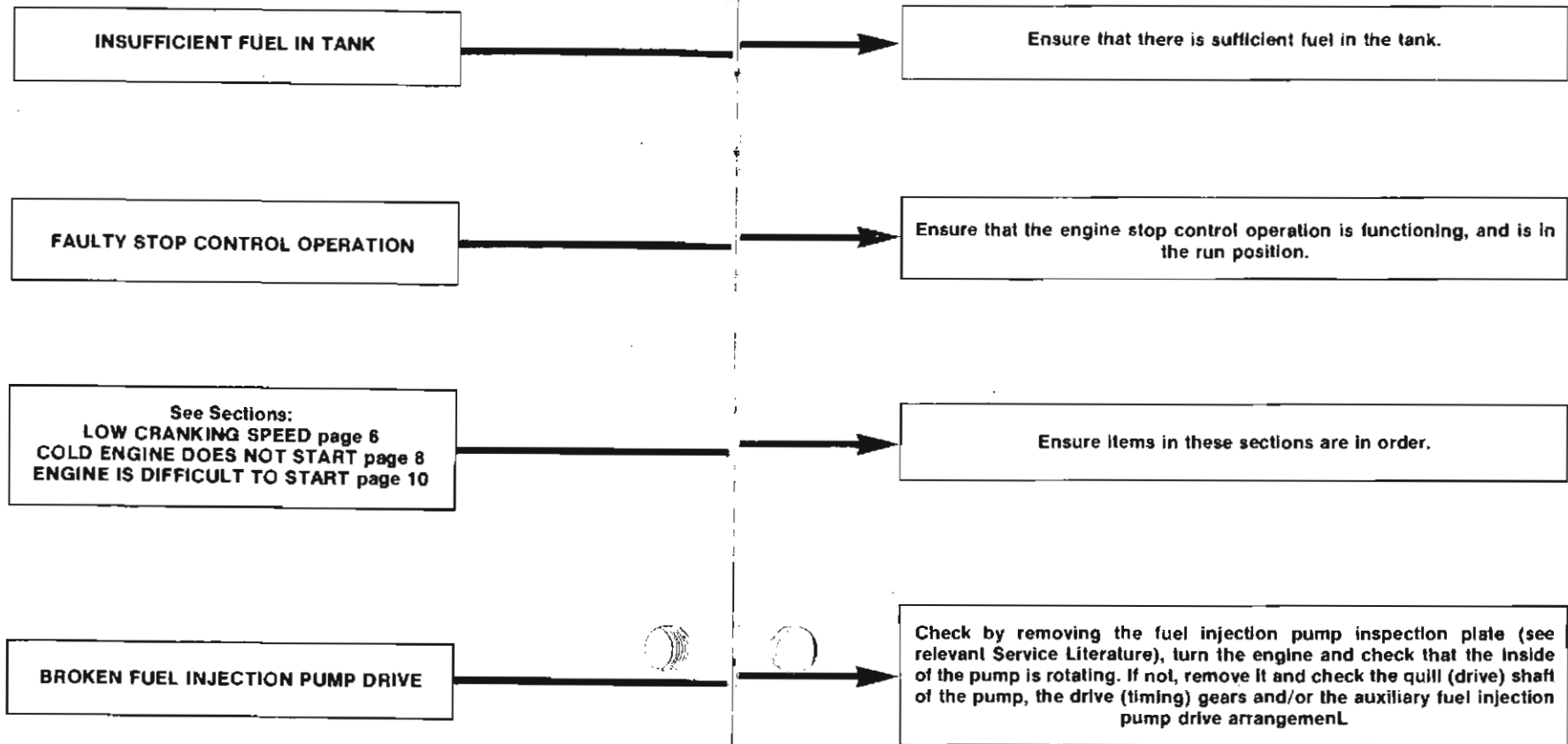


# ENGINE STARTS AND STOPS

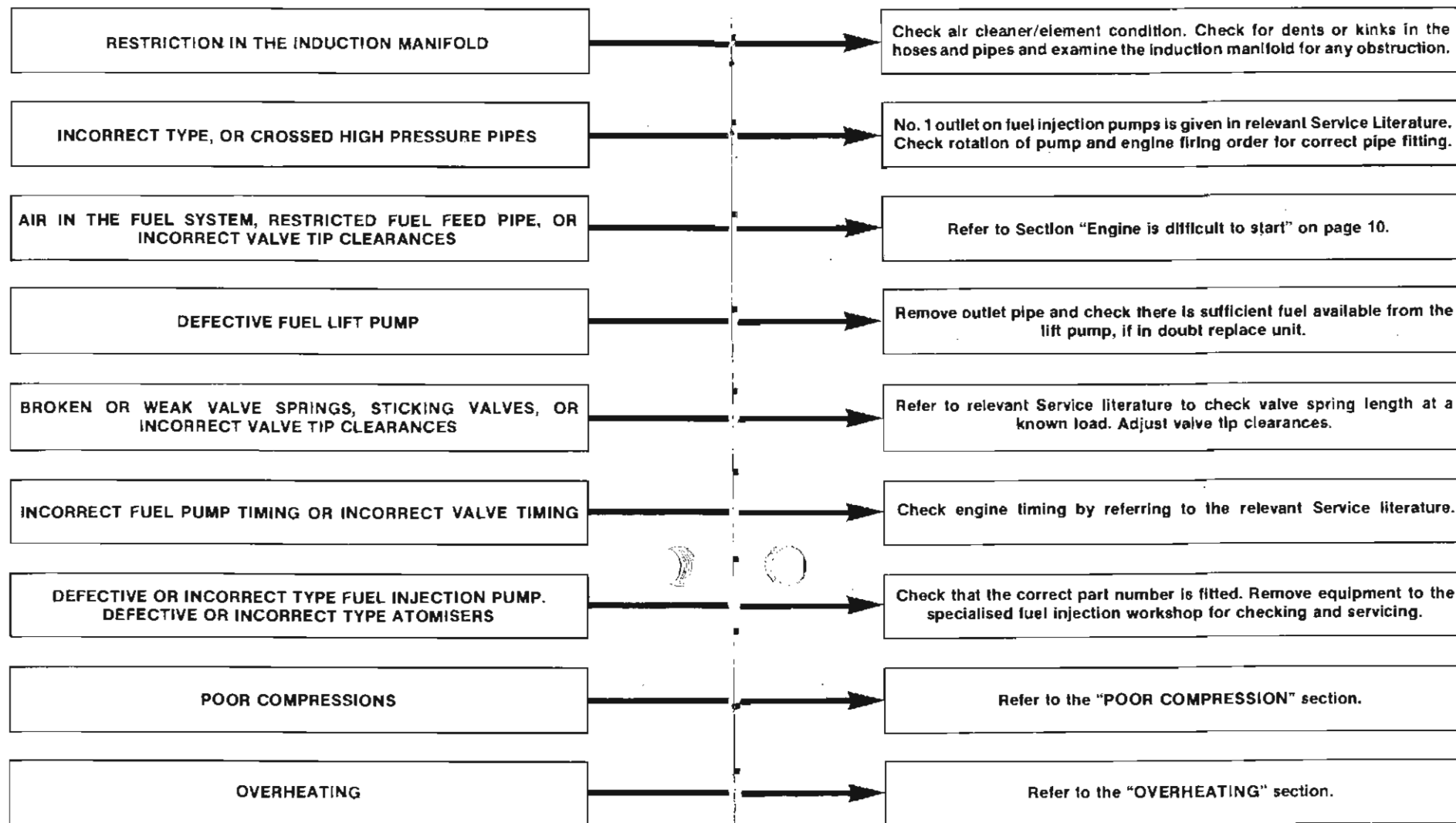




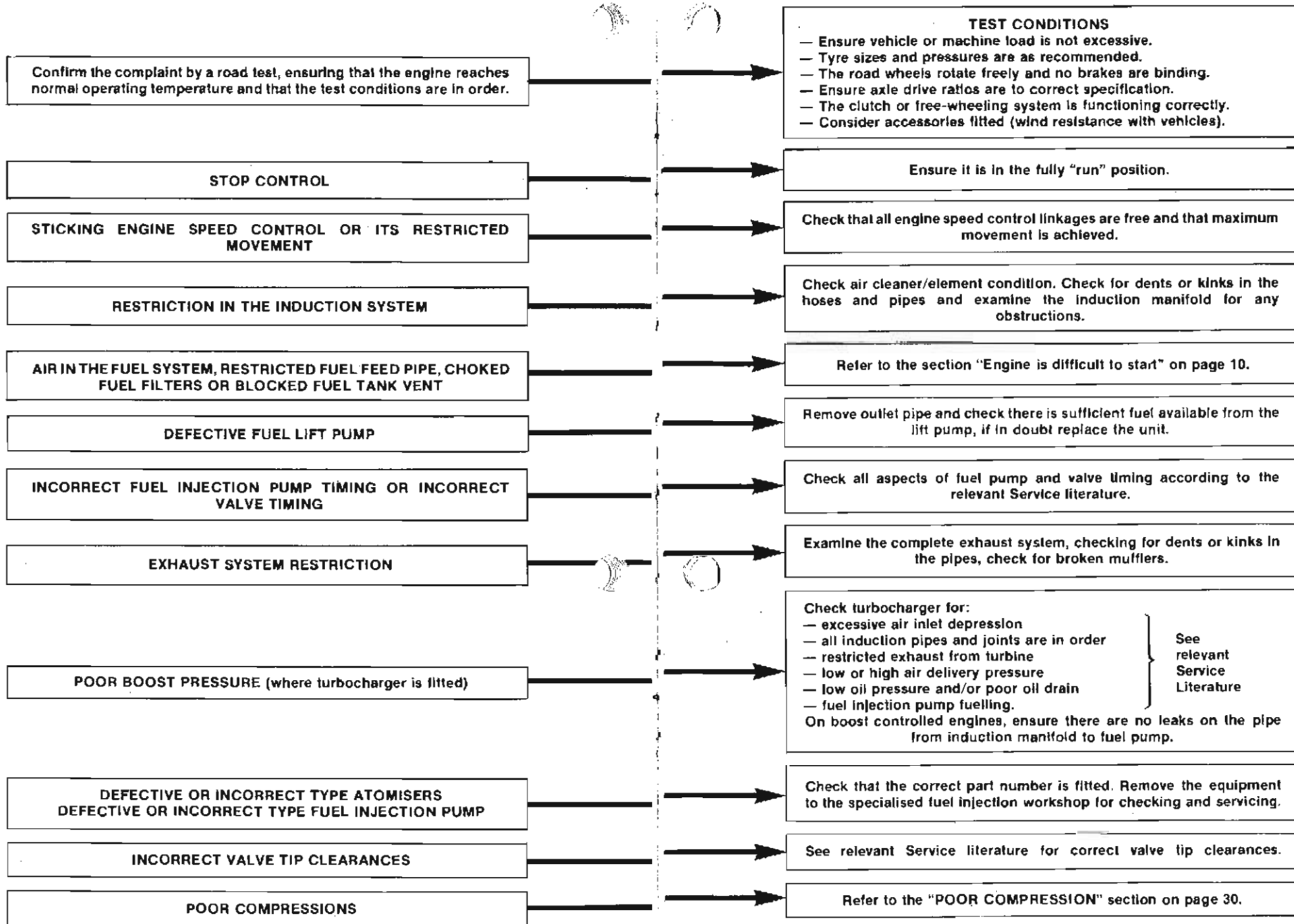
# ENGINE WILL NOT START



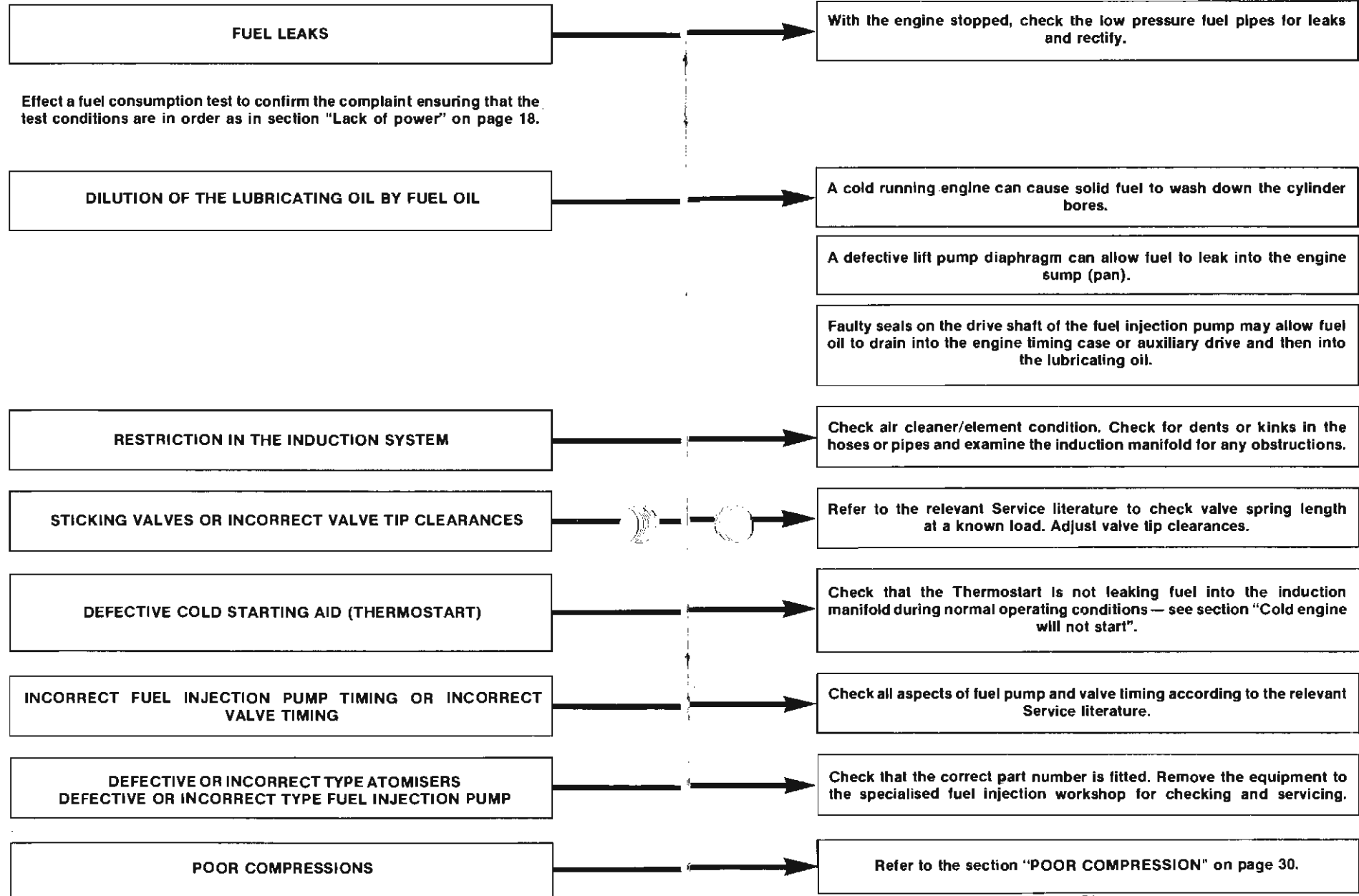
# ENGINE MISFIRES



# LACK OF POWER

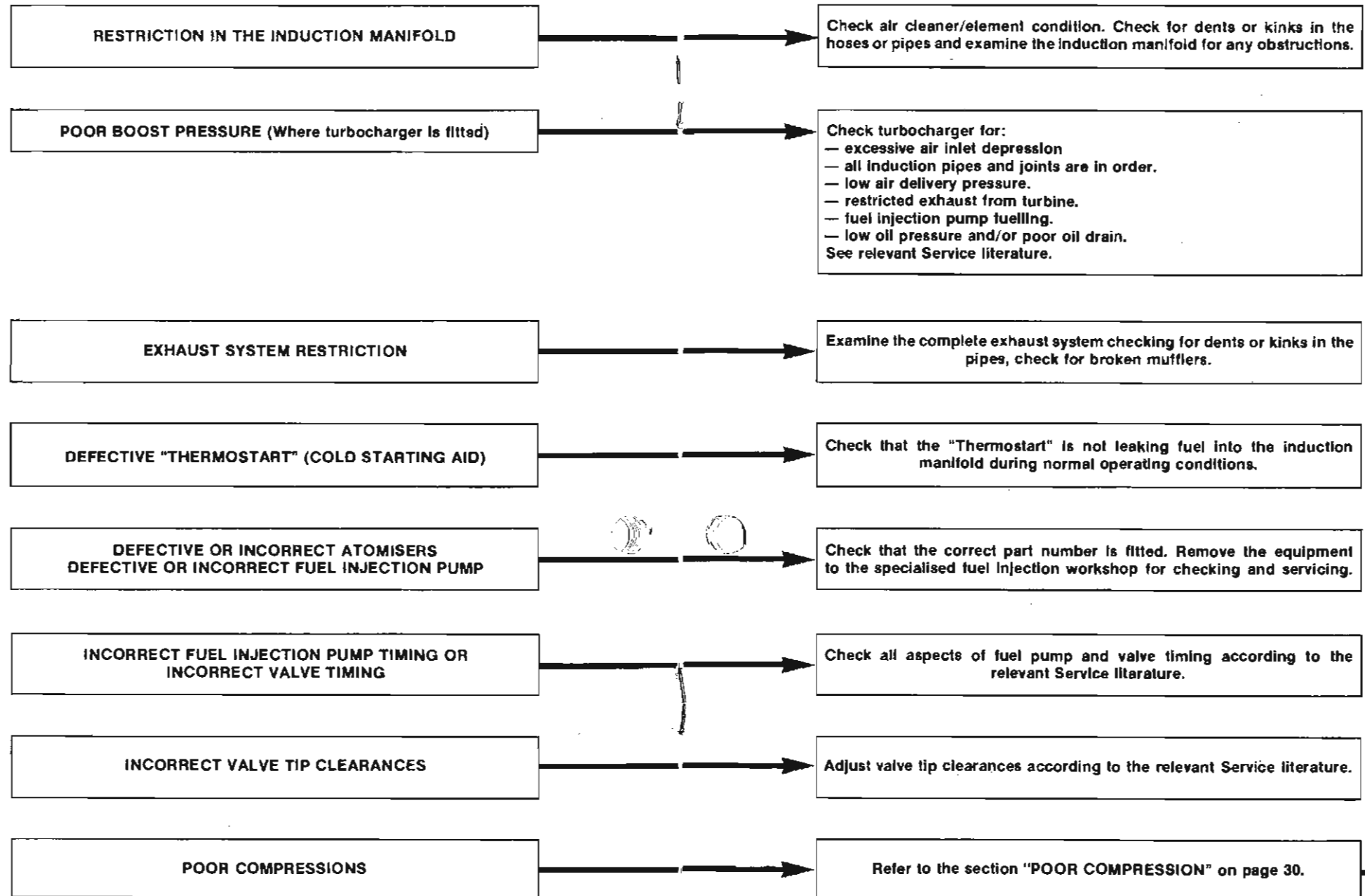


# EXCESSIVE FUEL CONSUMPTION

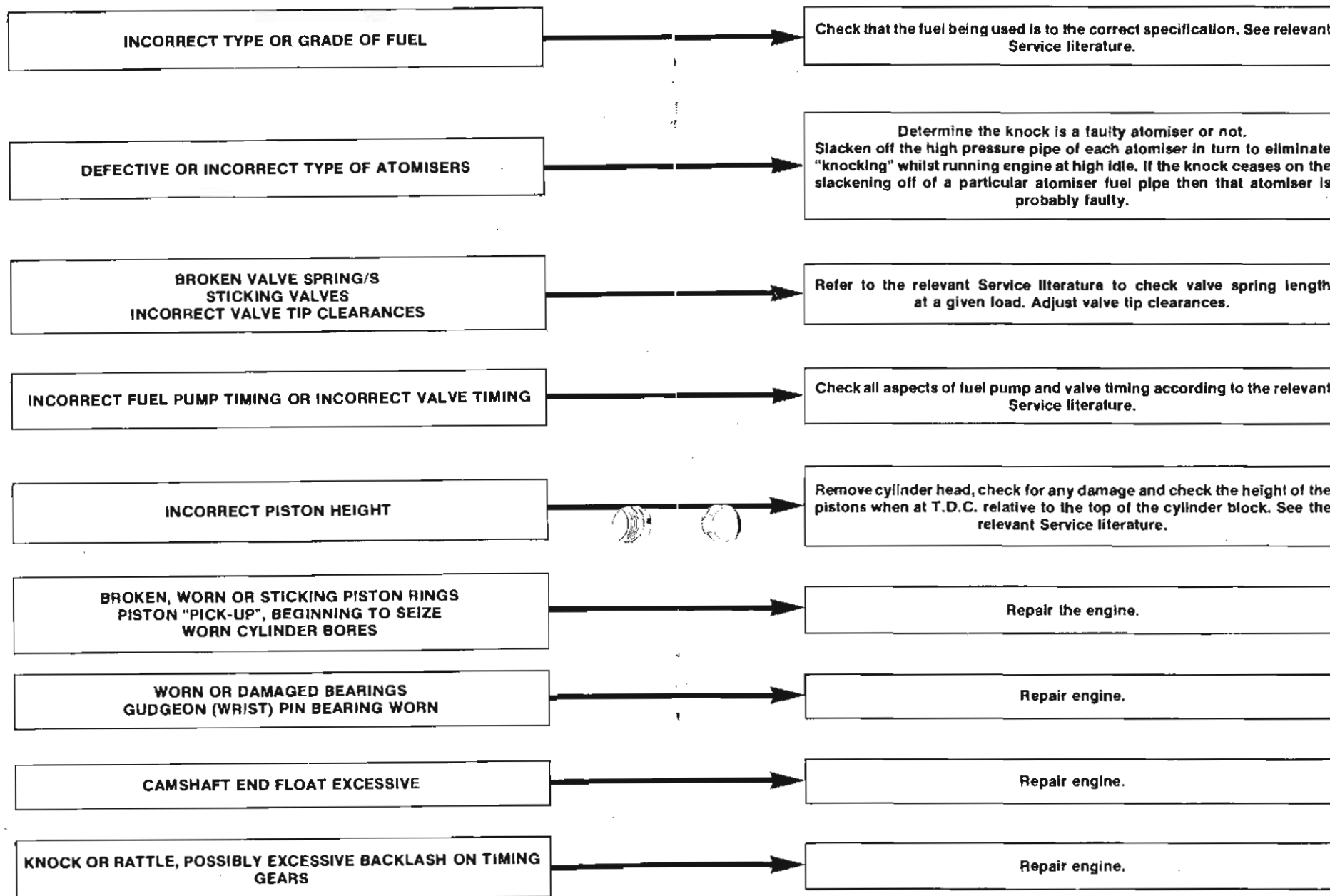


# BLACK EXHAUST

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.

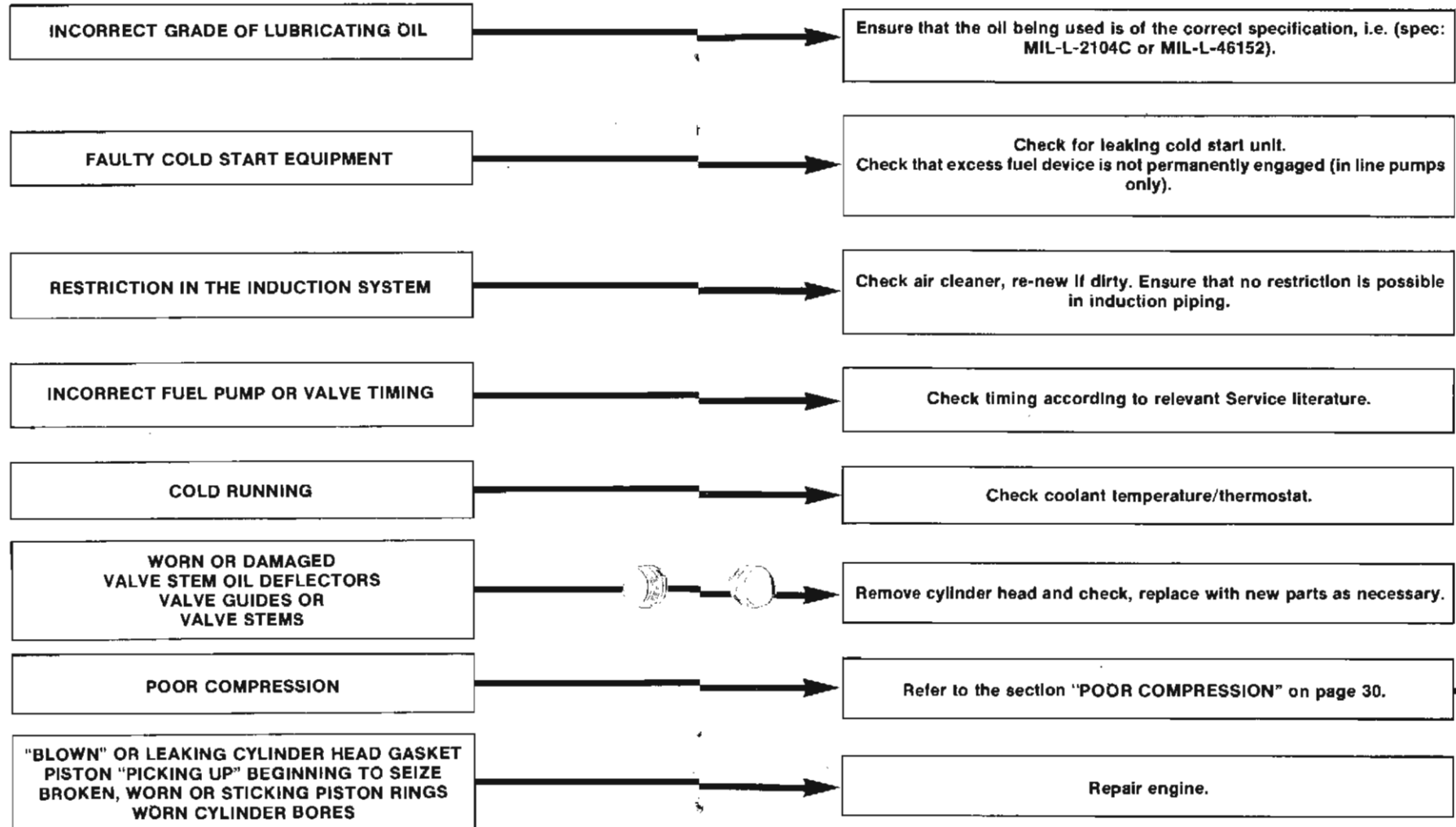


# ENGINE KNOCKING

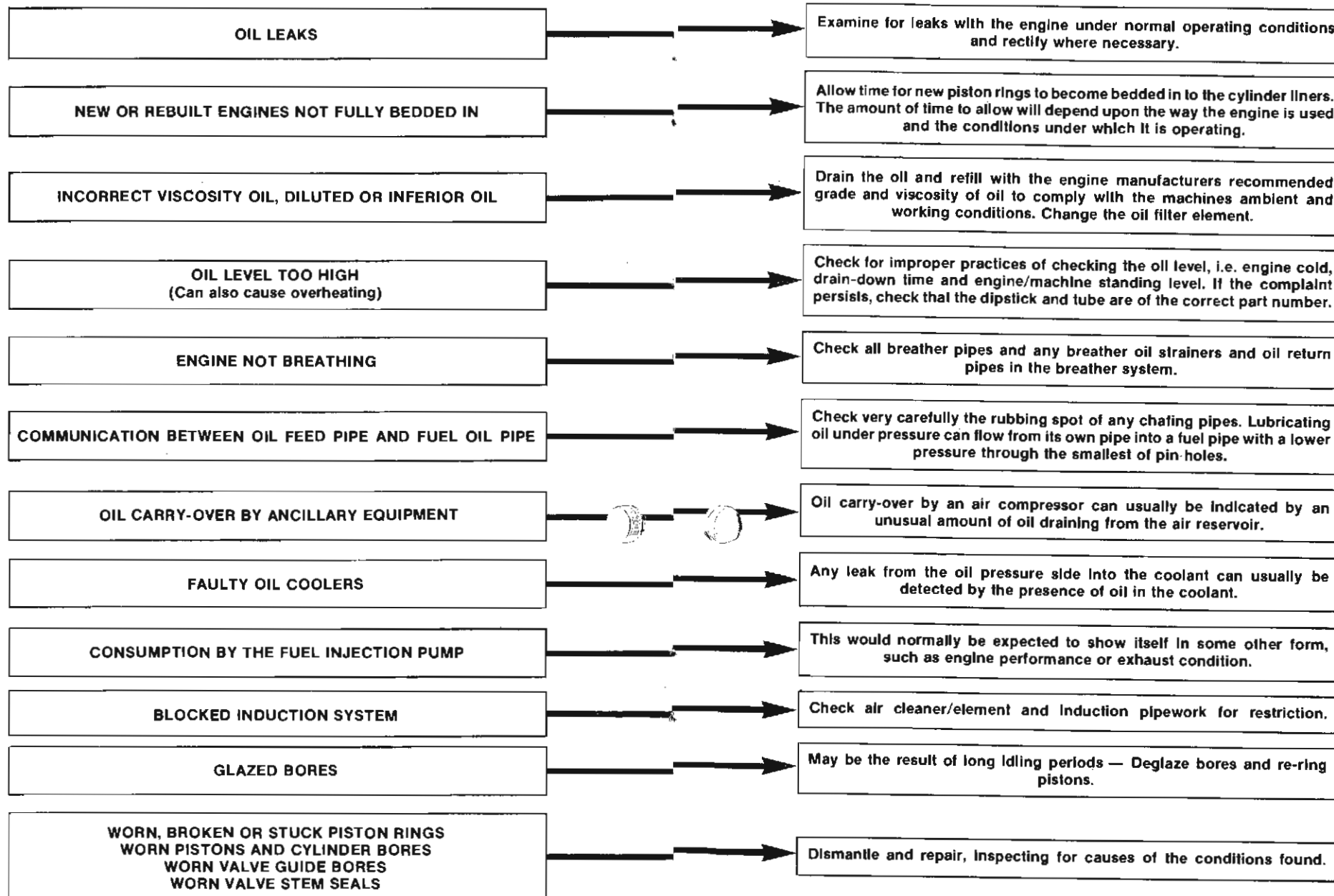


# BLUE/WHITE EXHAUST

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

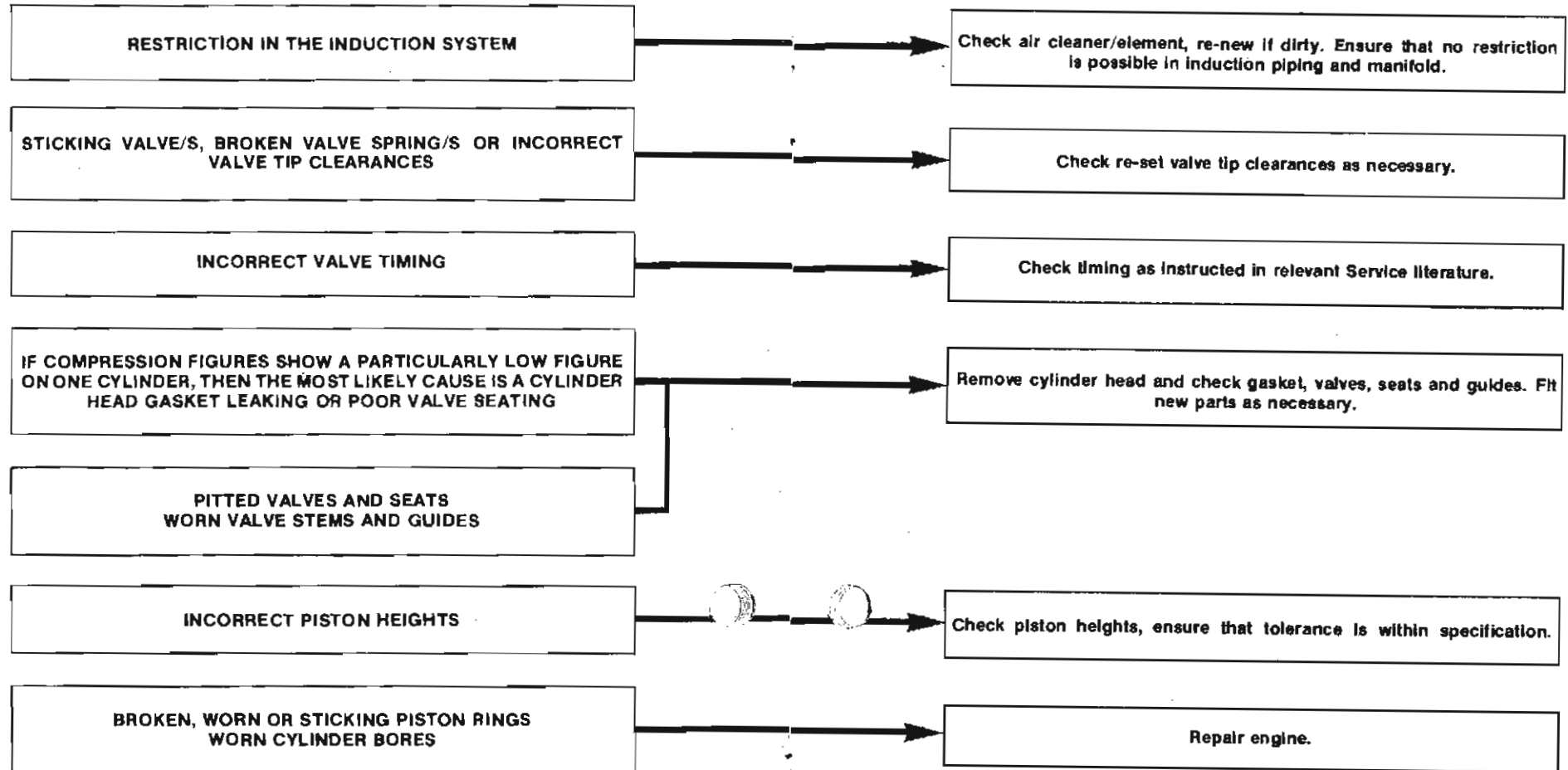


# EXCESSIVE LUBRICATING OIL CONSUMPTION



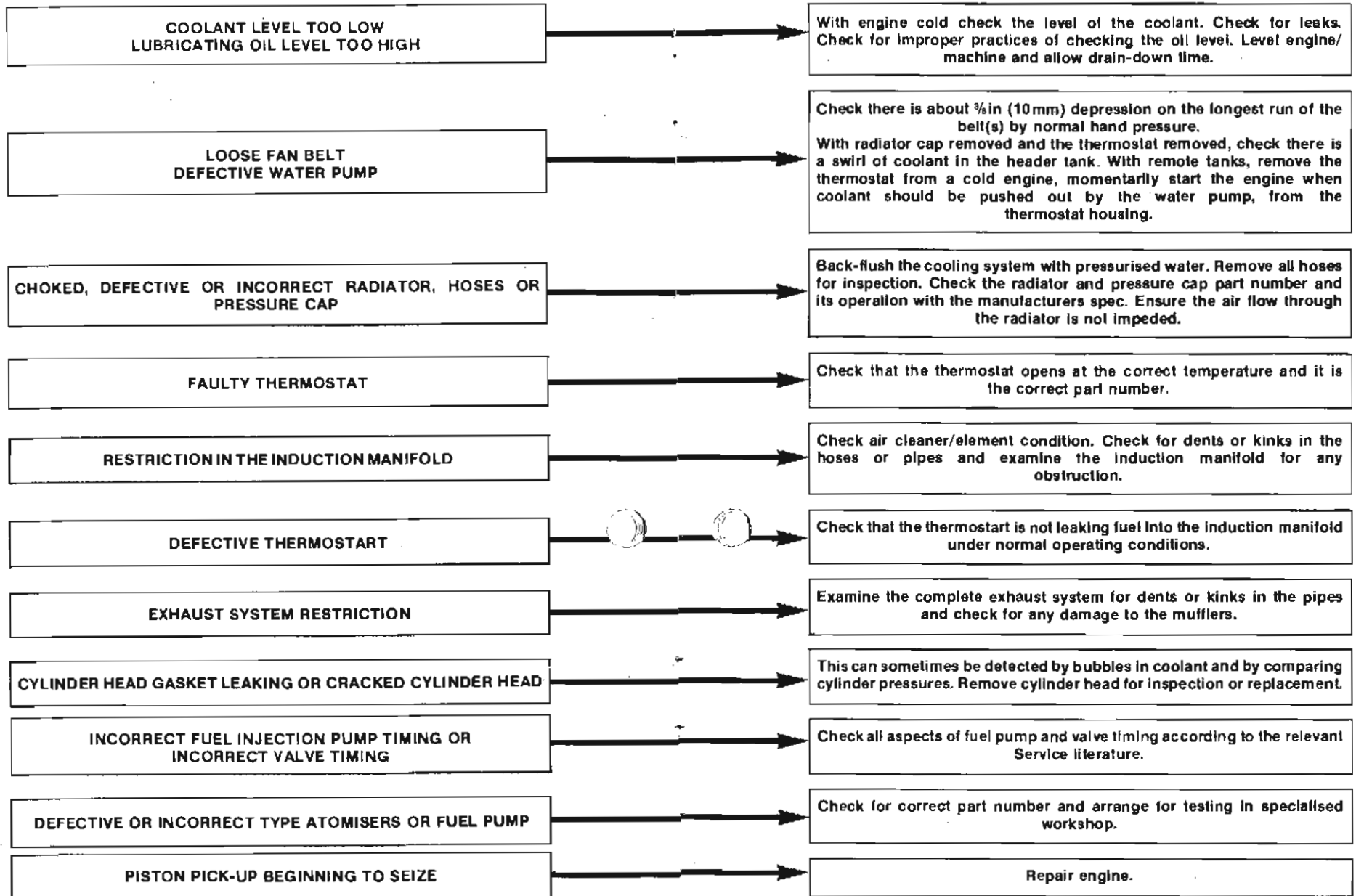


# POOR COMPRESSION



## 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.

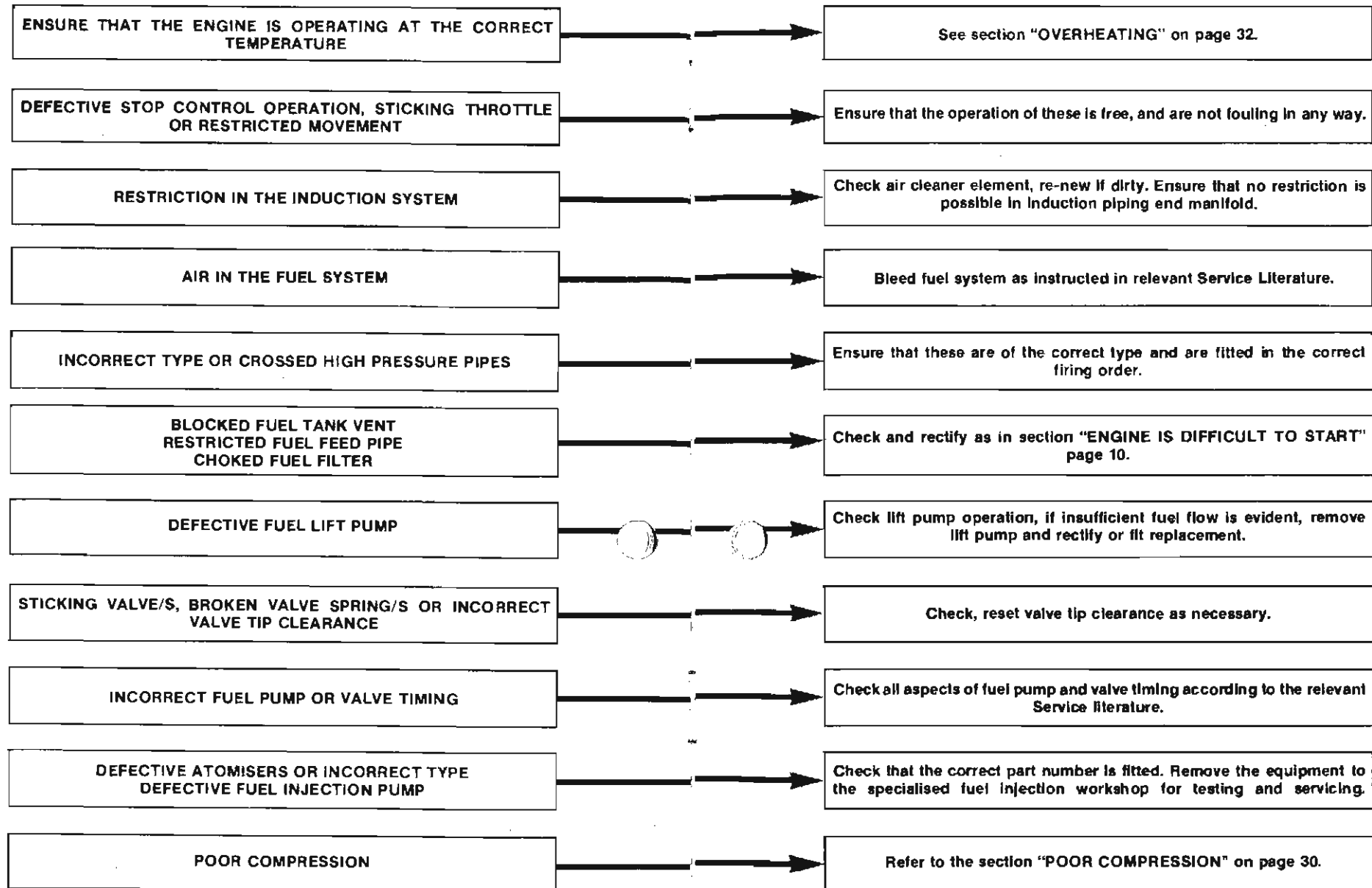
**DEFECTIVE EXHAUSTER (If fitted)**

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

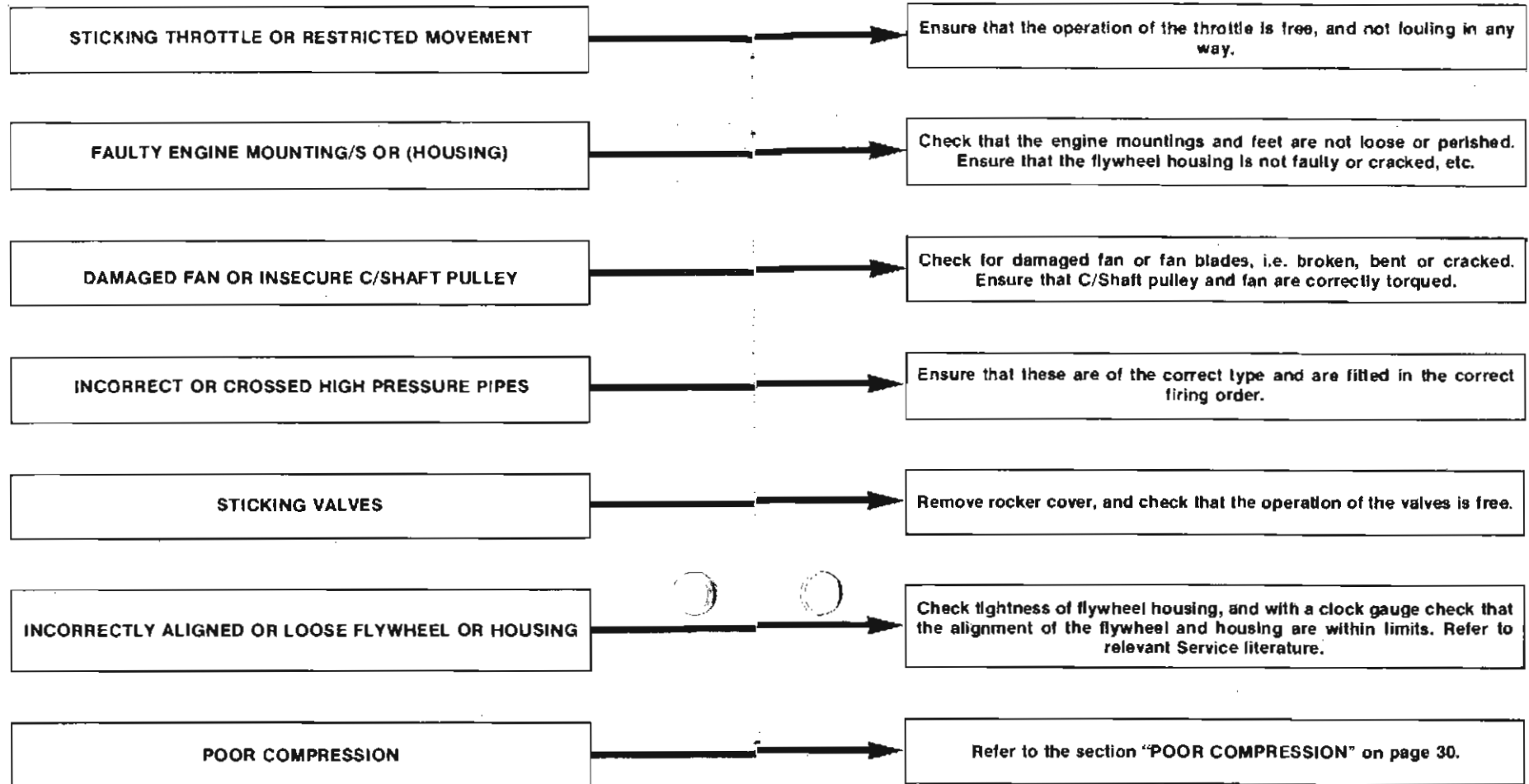
**PISTON PICK-UP BEGINNING TO SEIZE  
WORN CYLINDER BORES  
BROKEN, WORN OR STICKING PISTON RINGS  
CYLINDER HEAD GASKET LEAKING**

Repair engine.

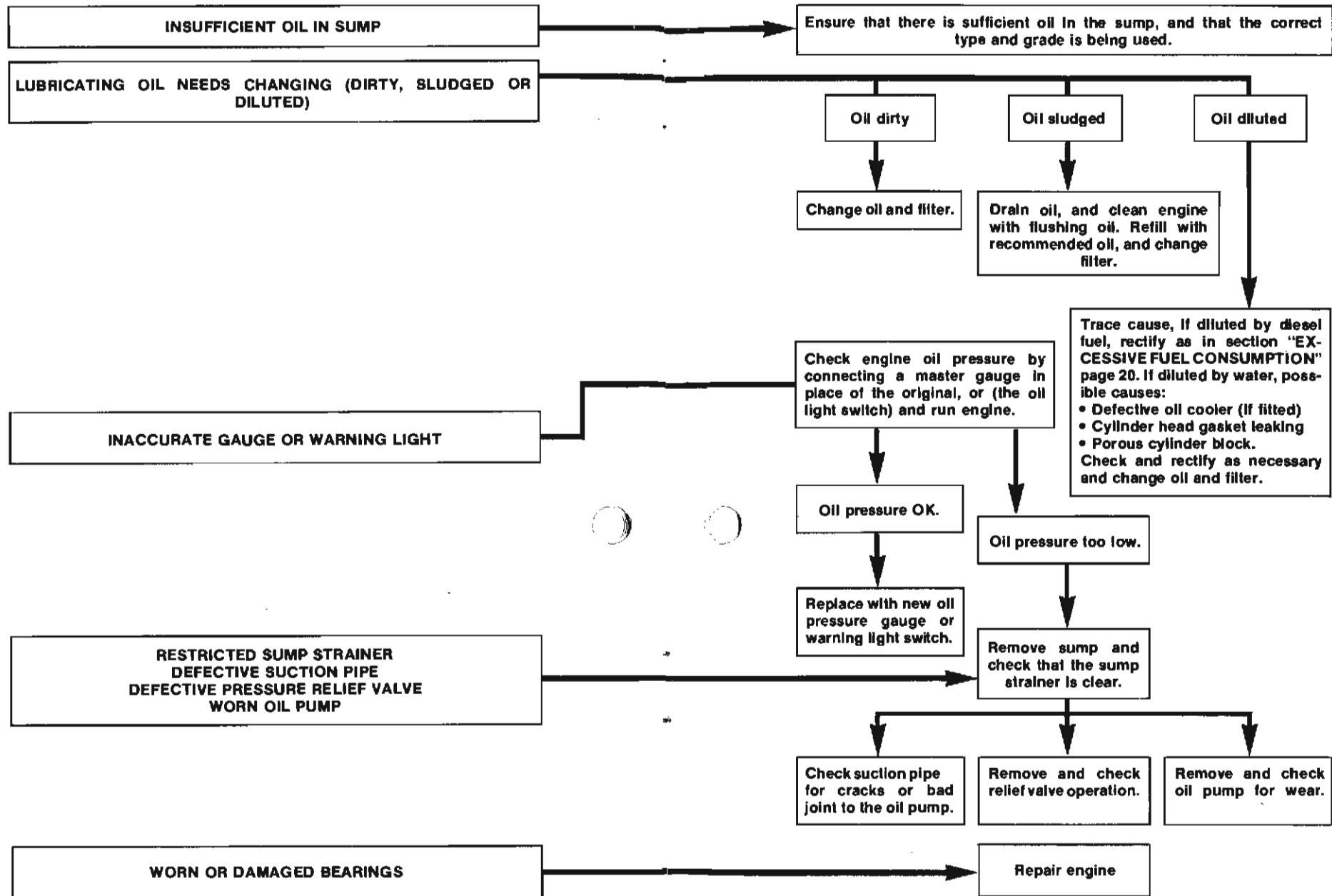
# ERRATIC RUNNING



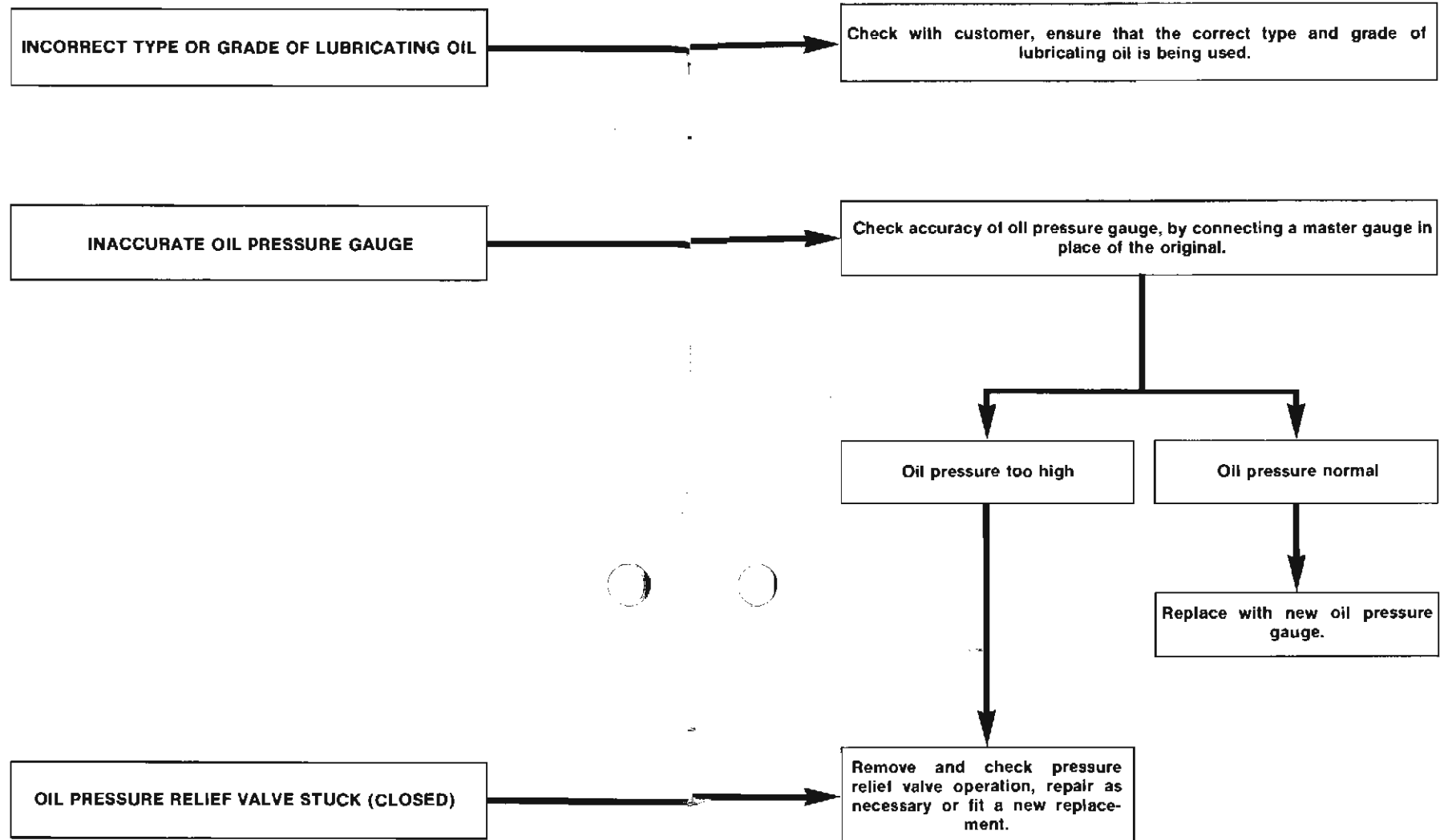
# VIBRATION



# 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.