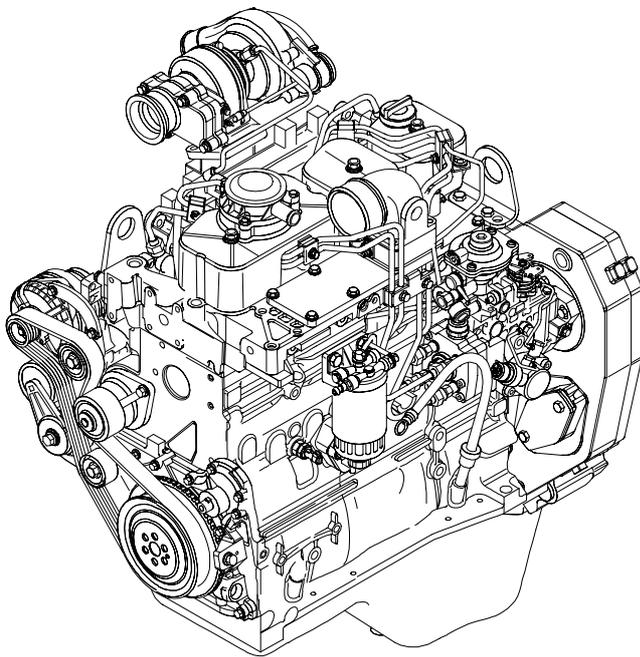


# REPAIR MANUAL FOR ENGINES

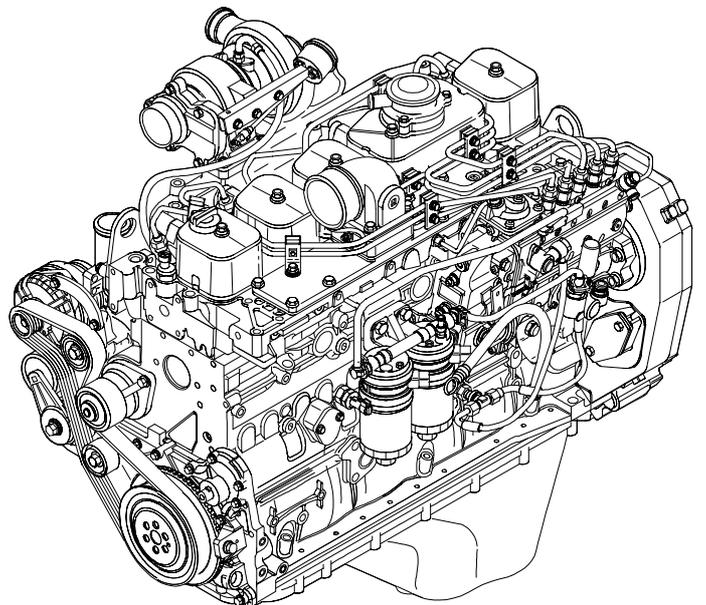
**F4BE0484E**

**F4BE0684D**

**F4BE0684B**



**F4BE0484E**



**F4BE0684D F4BE0684B**

*Every information, illustration and specification contained in the present manual is based on the most recent information available at the time of printing.*

*CNH France S.A. reserves the right, to modify the text at any time without prior communication.*

Sample of manual. Download All 196 pages at:

<https://www.arepairmanual.com/downloads/case-f4be0484ef4be0684df4be0684b-engine-service-repair-workshop-manual/>

Product: Case F4BE0484E,F4BE0684D,F4BE0684B Engine Service Repair Workshop Manual  
Full Download: <https://www.arepairmanual.com/downloads/case-f4be0484ef4be0684df4be0684b-engine-service-repair-workshop-manual/>

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## INTRODUCTION

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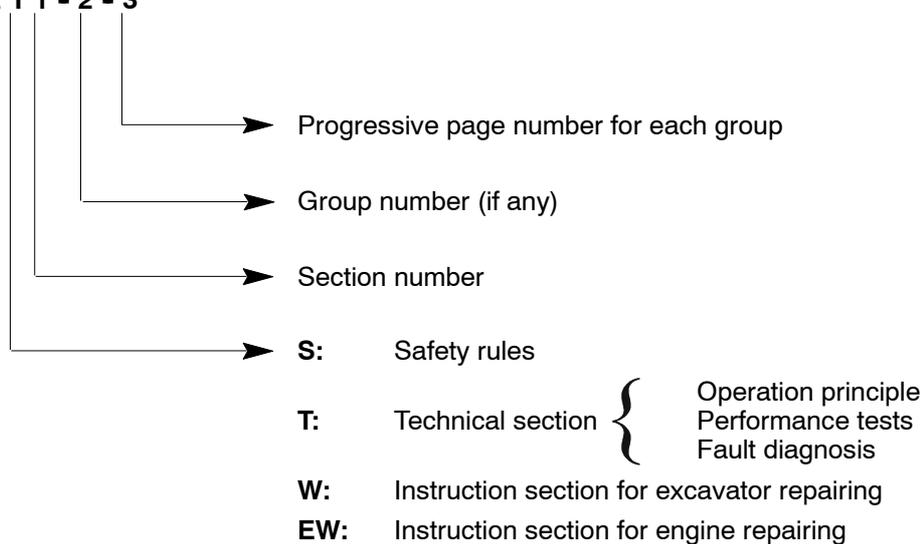
**TO THE READER**

- This manual was written for a skilled technician and contains all the technical information needed to repair this vehicle.
- Read this manual carefully for the information concerning repairing operations.

**FURTHER REFERENCES****PAGE NUMBER**

- Every page carries a number on the top right corner. Every page contains the following information:

Example: **T 1 - 2 - 3**




---

## SYMBOLS

This manual contains safety warning symbols and indications referring to possible injuries or vehicle damages.



This symbol regards safety.

Use great care when you see this symbol because possible injuries to the personnel may occur. Strictly observe the precautions marked with this symbol.

The safety warning symbol is used also to draw attention on the weight of a component or an element. Make sure you are always using the right equipment and lifting techniques when handling heavy loads, in order to prevent injuries or damages.

---

## UNIT OF MEASURE

This manual adopts the units of measure based on the International System.

The MKSA system units of measure are indicated within brackets after the units of measure of the International System.

Example: 24.5 Mpa (250 kgf/cm<sup>2</sup>).

The following table converts the International System units of measure in some of the main units belonging to other systems.

Quantity	To convert from (IS)	in (Others)	Multiply by	Quantity	To convert from (IS)	in (Others)	Multiply by
Length	mm	in	0.03937	Pressure	MPa	kgf/cm <sup>2</sup>	10.197
	mm	ft	0.003281		MPa	psi	145.0
Volume	L	US gal	0.2642	Power	kW	PS	1.360
	L	US qt	1.057		kW	HP	1.341
	m <sup>3</sup>	yd <sup>3</sup>	1.308	Temperature	°C	°F	°C x 1.8 + 32
Mass	kg	lb	2.205	Speed	km/h	mph	0.6214
Force	N	kgf	0.10197		min <sup>-1</sup>	rpm	1.0
	N	lbf	0.2248	Capacity	L/min	US gpm	0.2642
Torque	N.m	kgf.m	0.10197		mL/rev	cc/rev	1.0
	N.m	lbf.ft	0.7375				

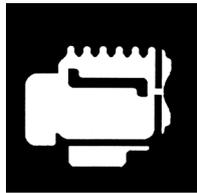
# ENGINES

## INDEX OF SECTIONS



**Section 1** - Diagnostics

EW-1-1



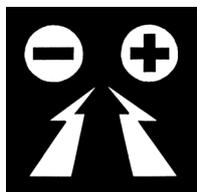
**Section 2** - Engine F4BE0484E overhaul

EW-2-1



**Section 3** - Overhaul of F4BE0684B - F4BE0684D engines

EW-3-1



**Section 4** - Recharging and start-up

EW-4-1



# DIAGNOSTICS



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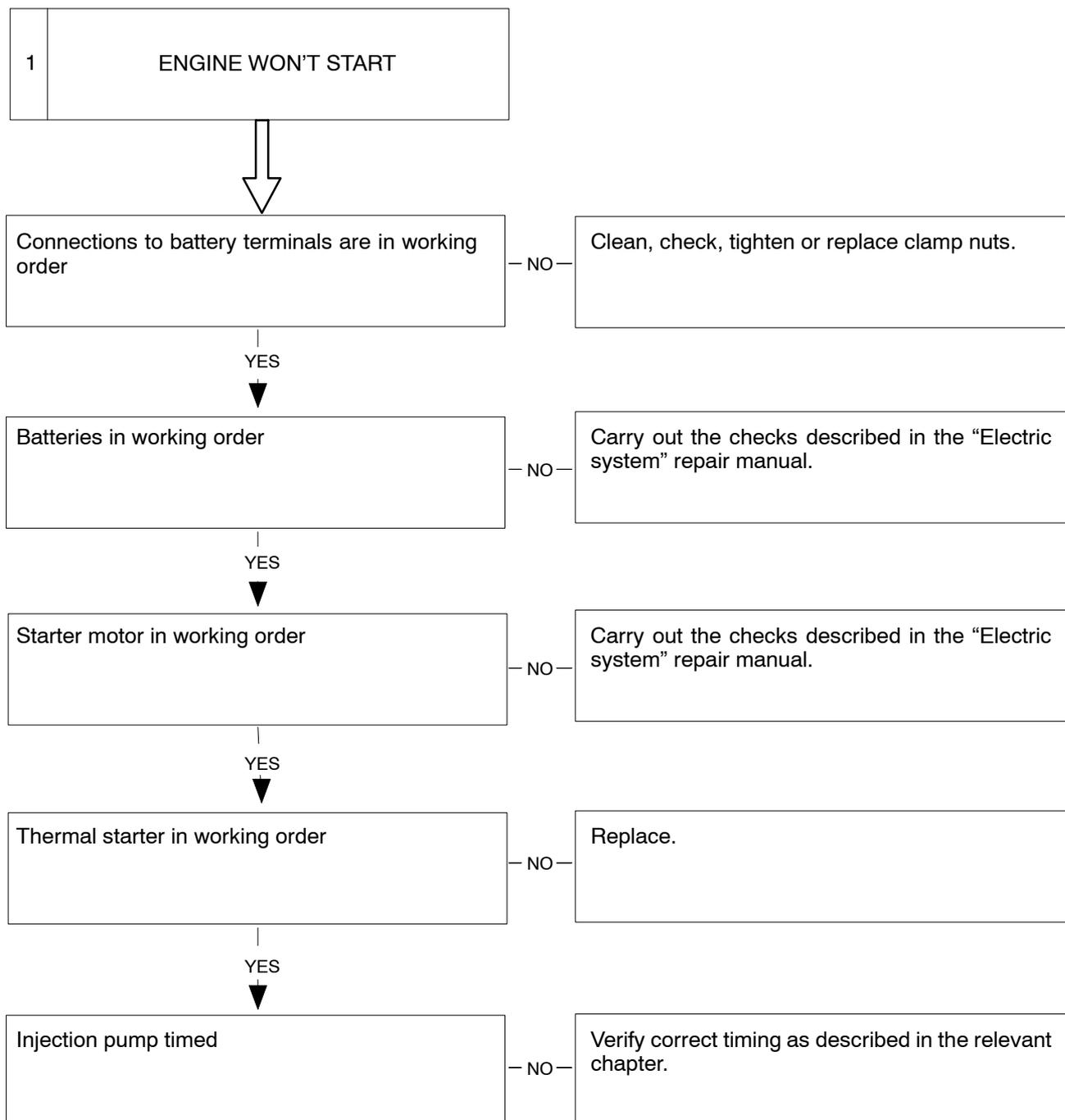
Diagnostics .....	EW-1-3
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DIAGNOSTICS

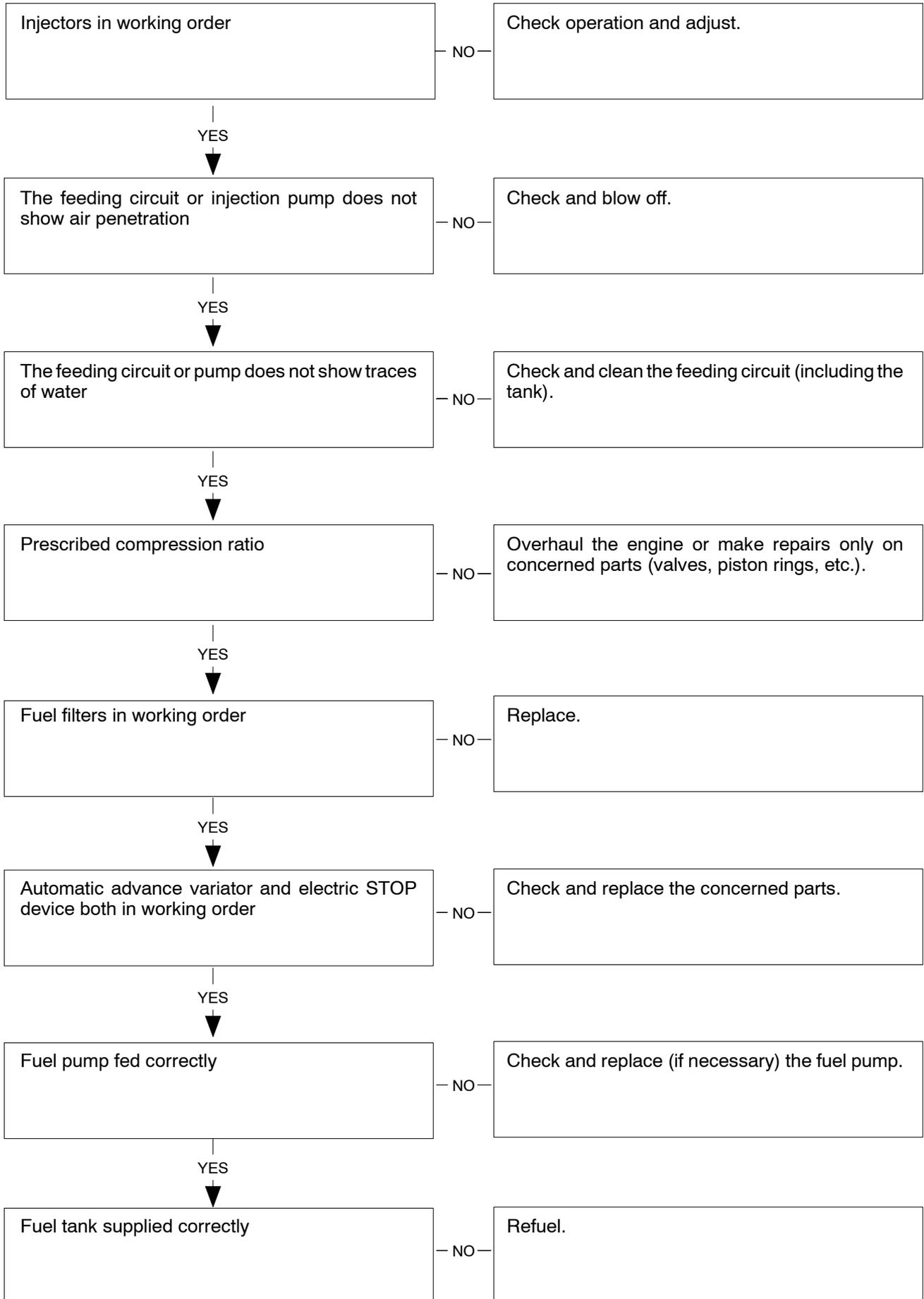
Main engine operating anomalies:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1 - Engine won't start;</li> <li>2 - Engine overheats;</li> <li>3 - Engine lacks power and works erratically;</li> <li>4 - Engine exhaust smoke black or dark grey;</li> <li>5 - Engine exhaust smoke grey (verging on white);</li> </ul> | <ul style="list-style-type: none"> <li>6 - Engine exhaust smoke light blue;</li> <li>7 - Engine knocks irregularly;</li> <li>8 - Engine stops;</li> <li>9 - Engine exceeds max. revs number;</li> <li>10 - Excessive or insufficient oil pressure;</li> <li>11 - Excessive fuel consumption;</li> <li>12 - Engine won't stop.</li> </ul> |
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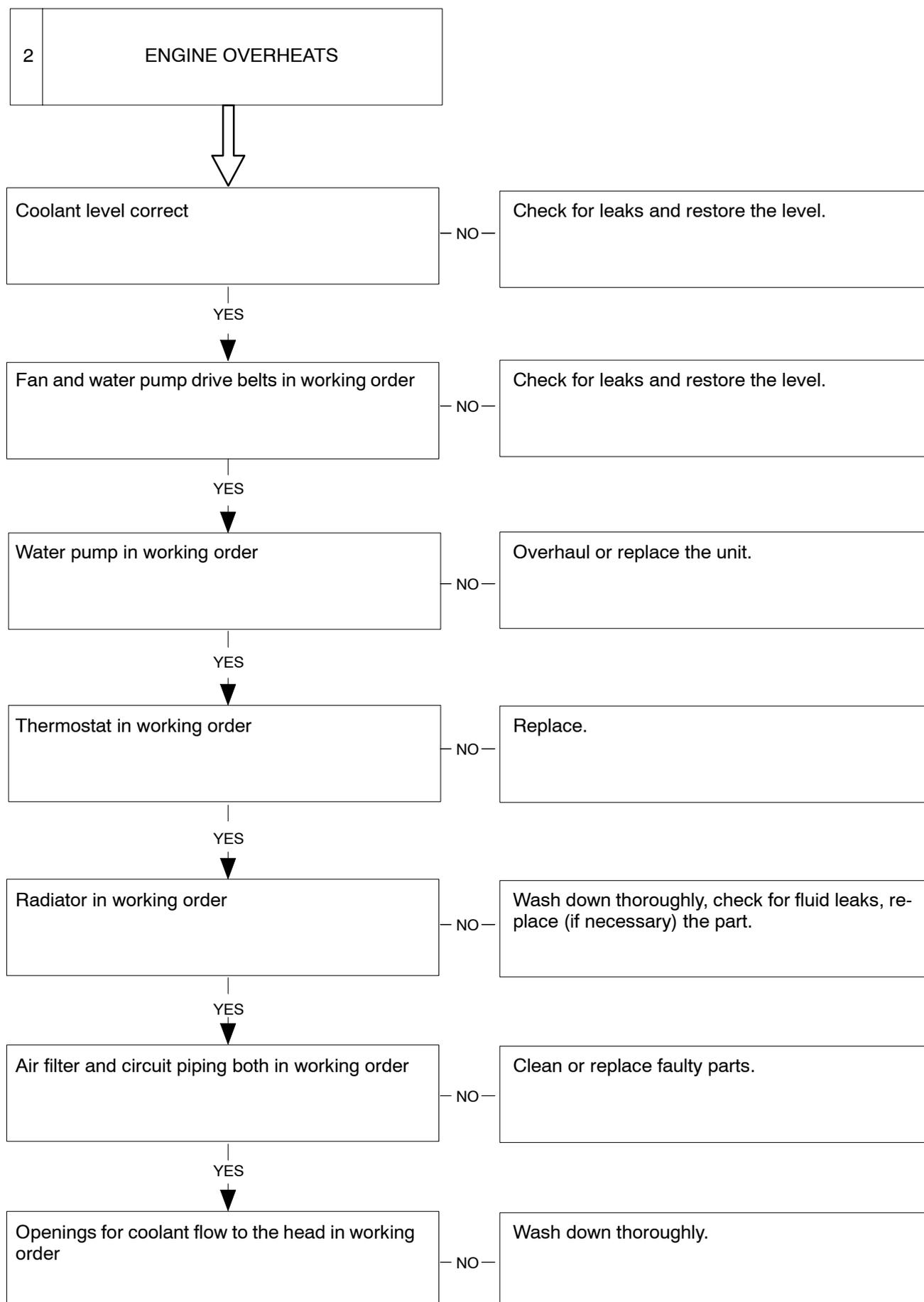


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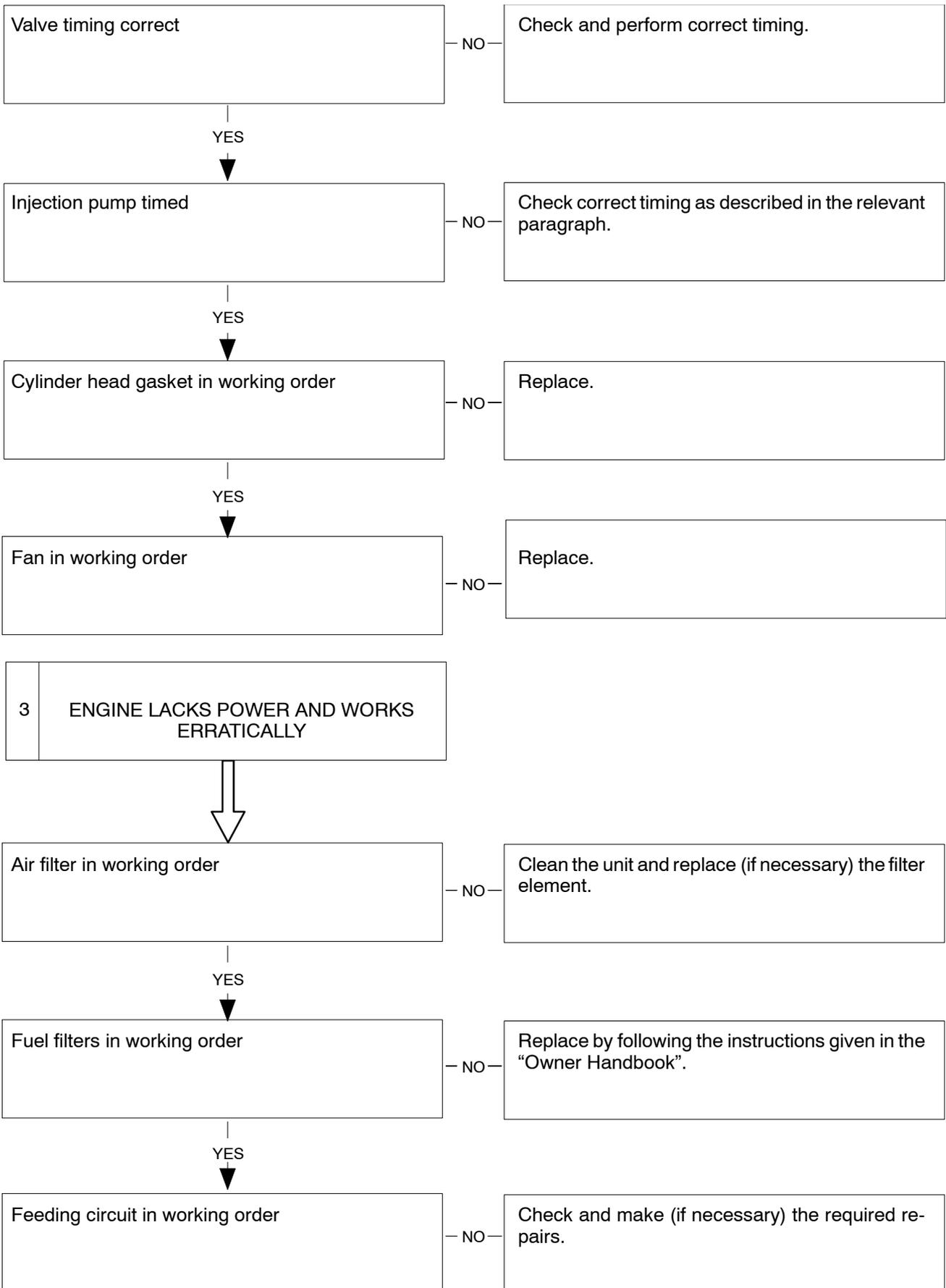
DIAGNOSTICS



## DIAGNOSTICS



DIAGNOSTICS

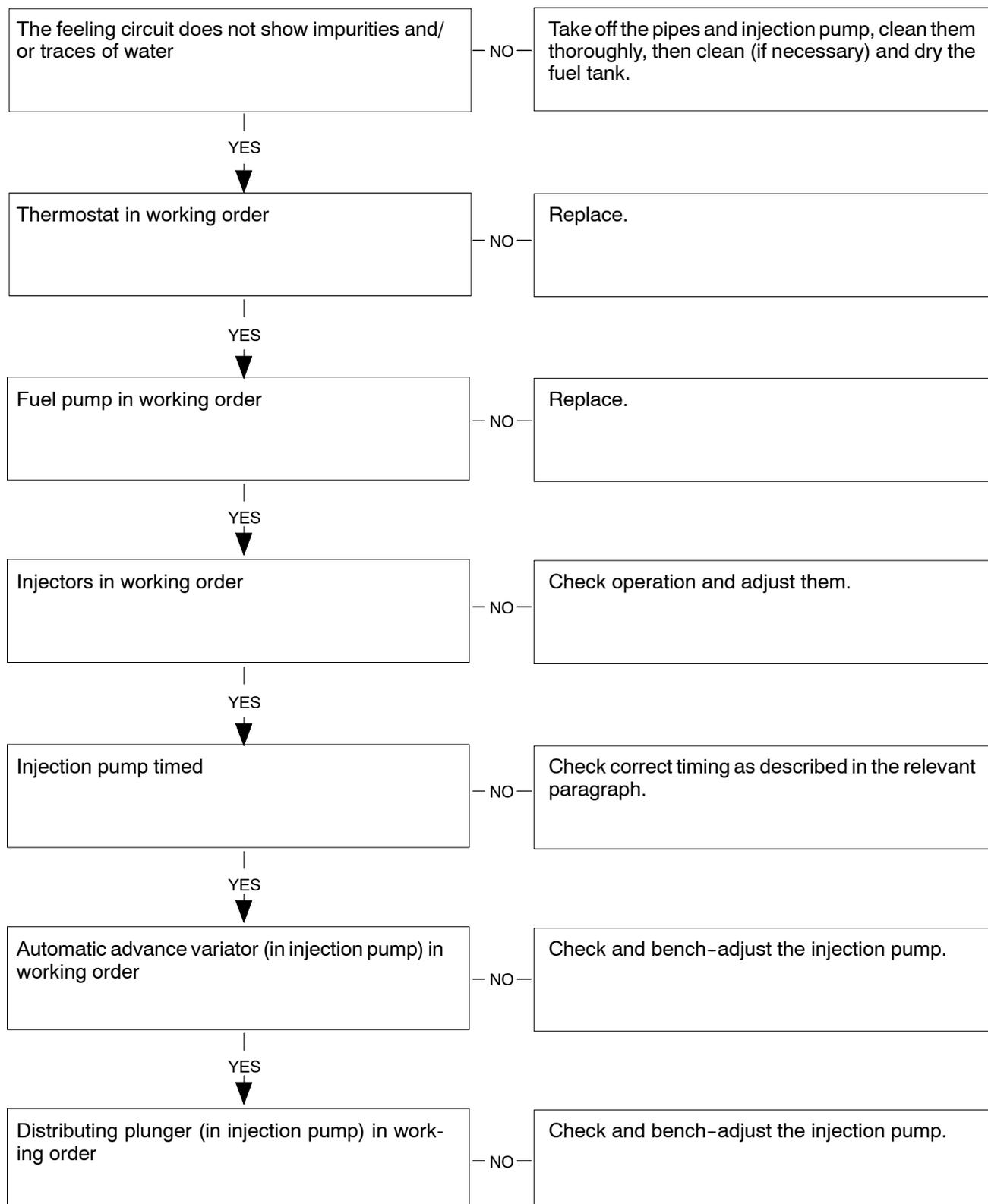


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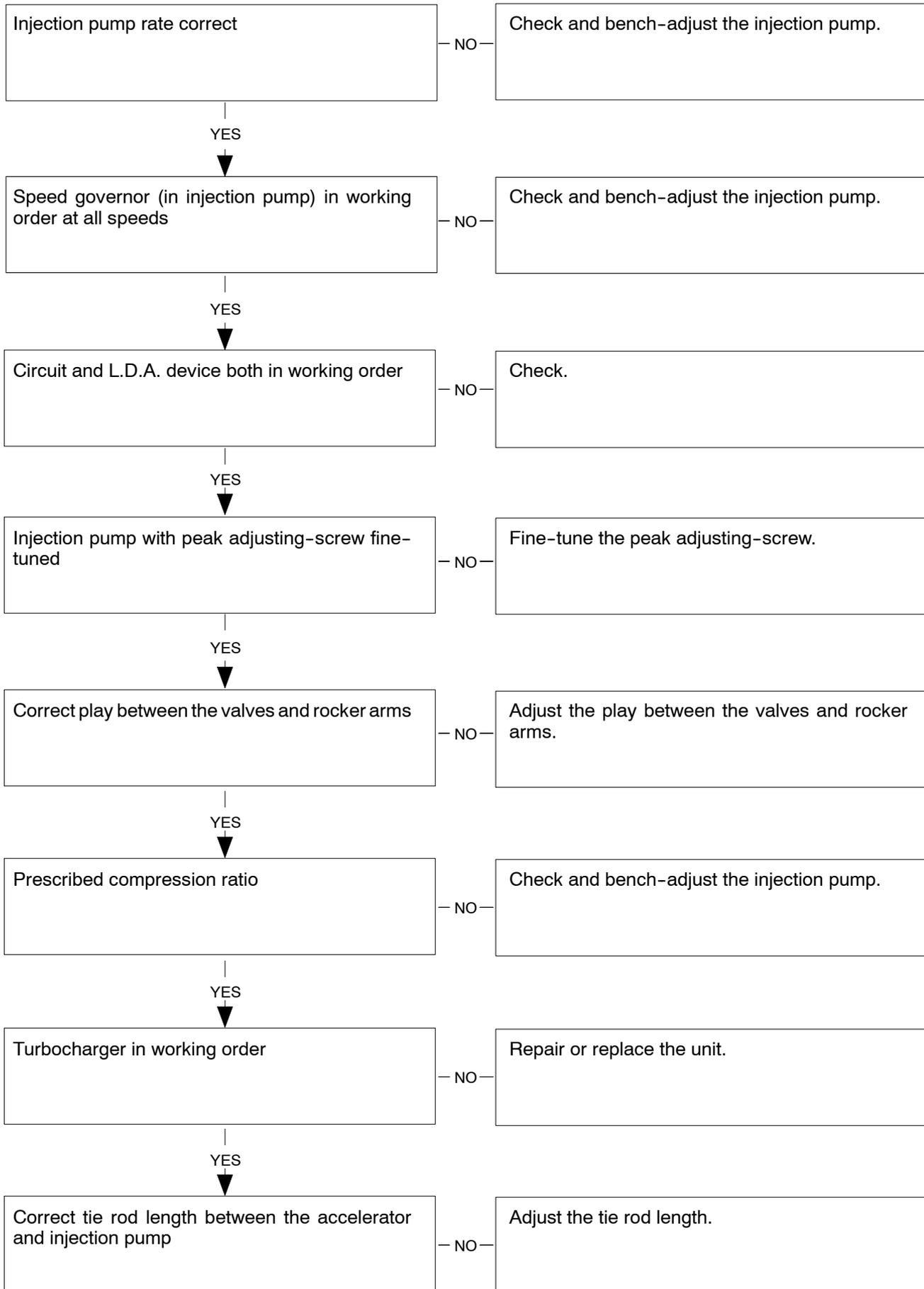
**DIAGNOSTICS**


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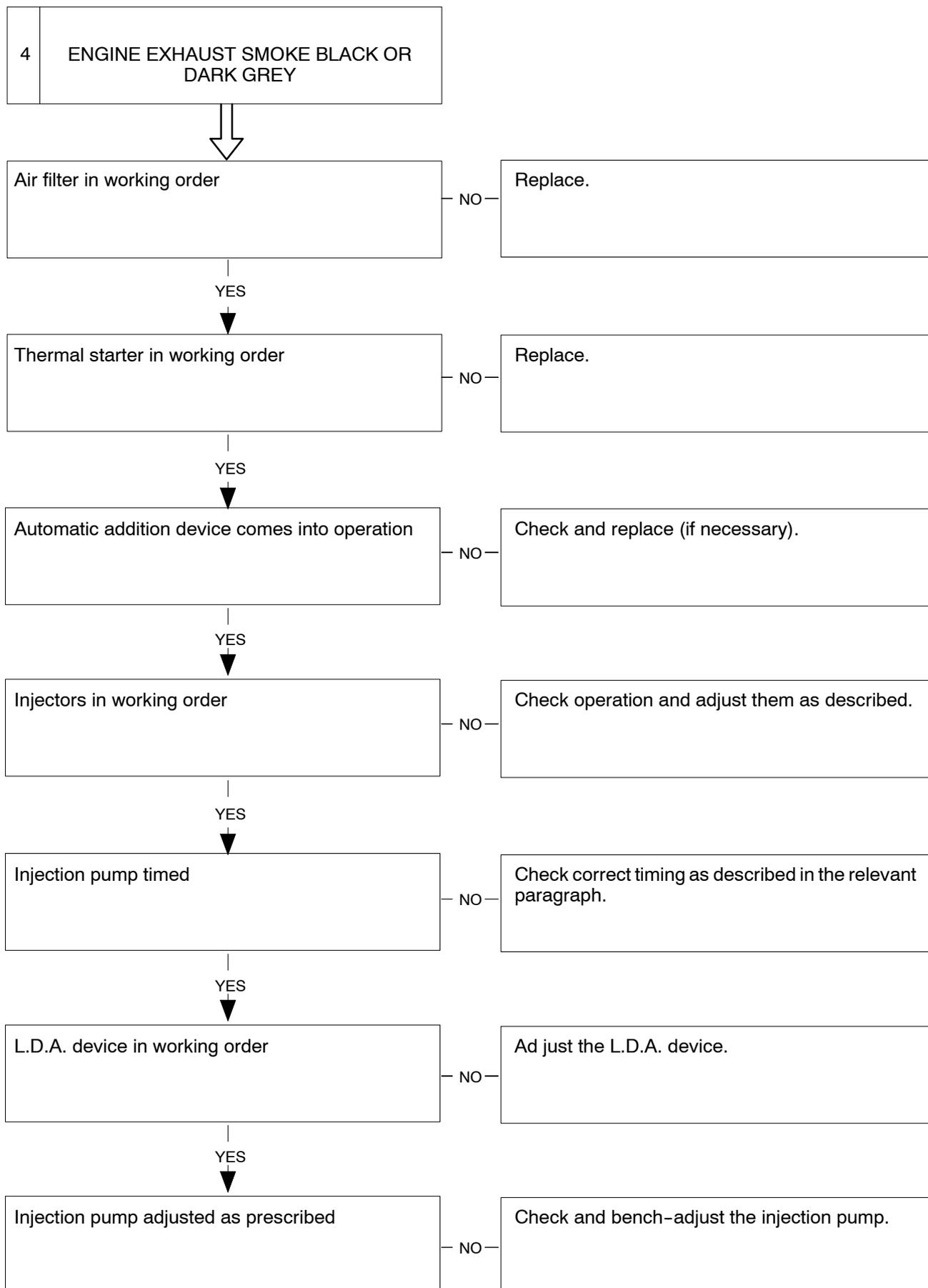


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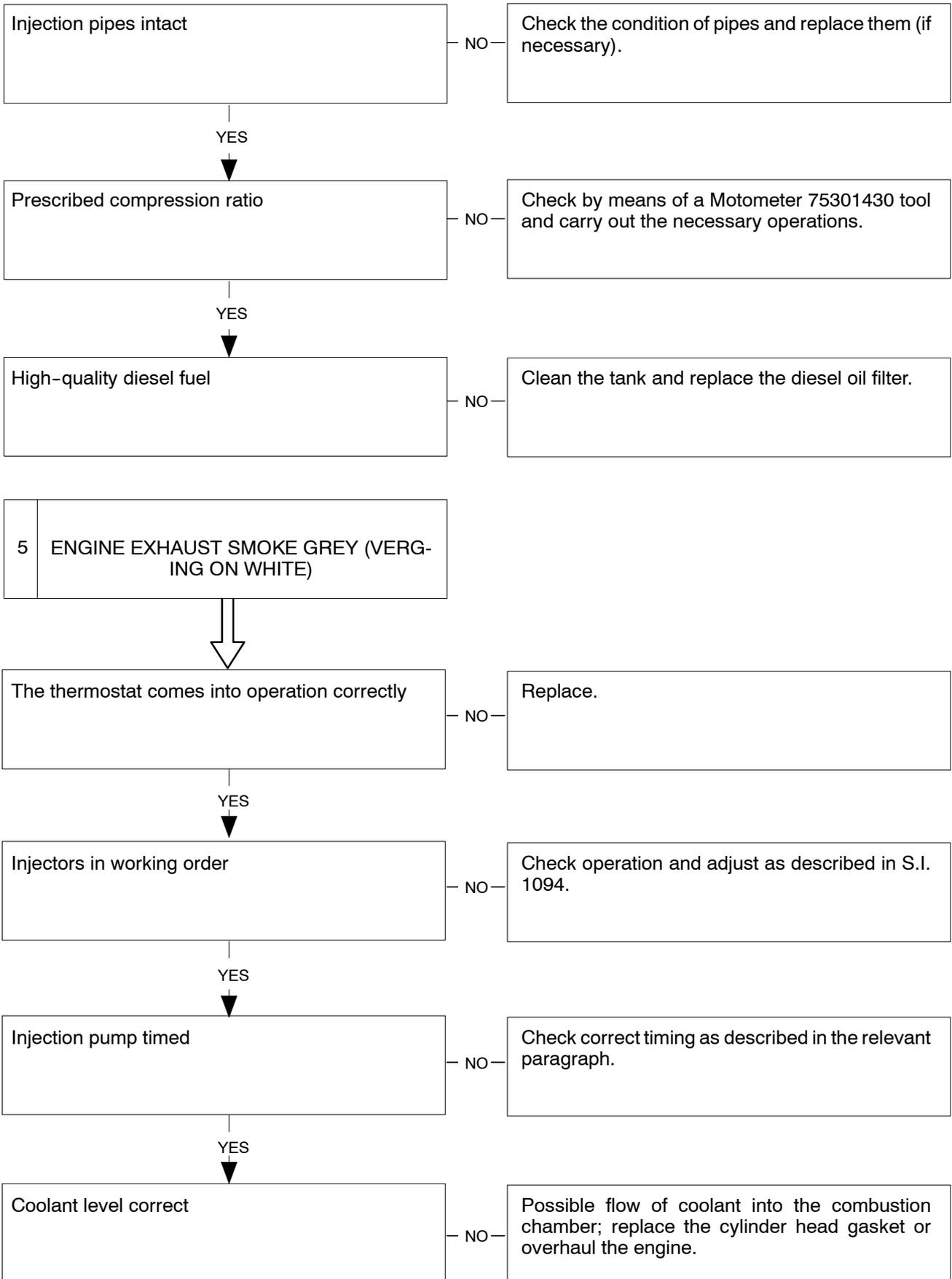


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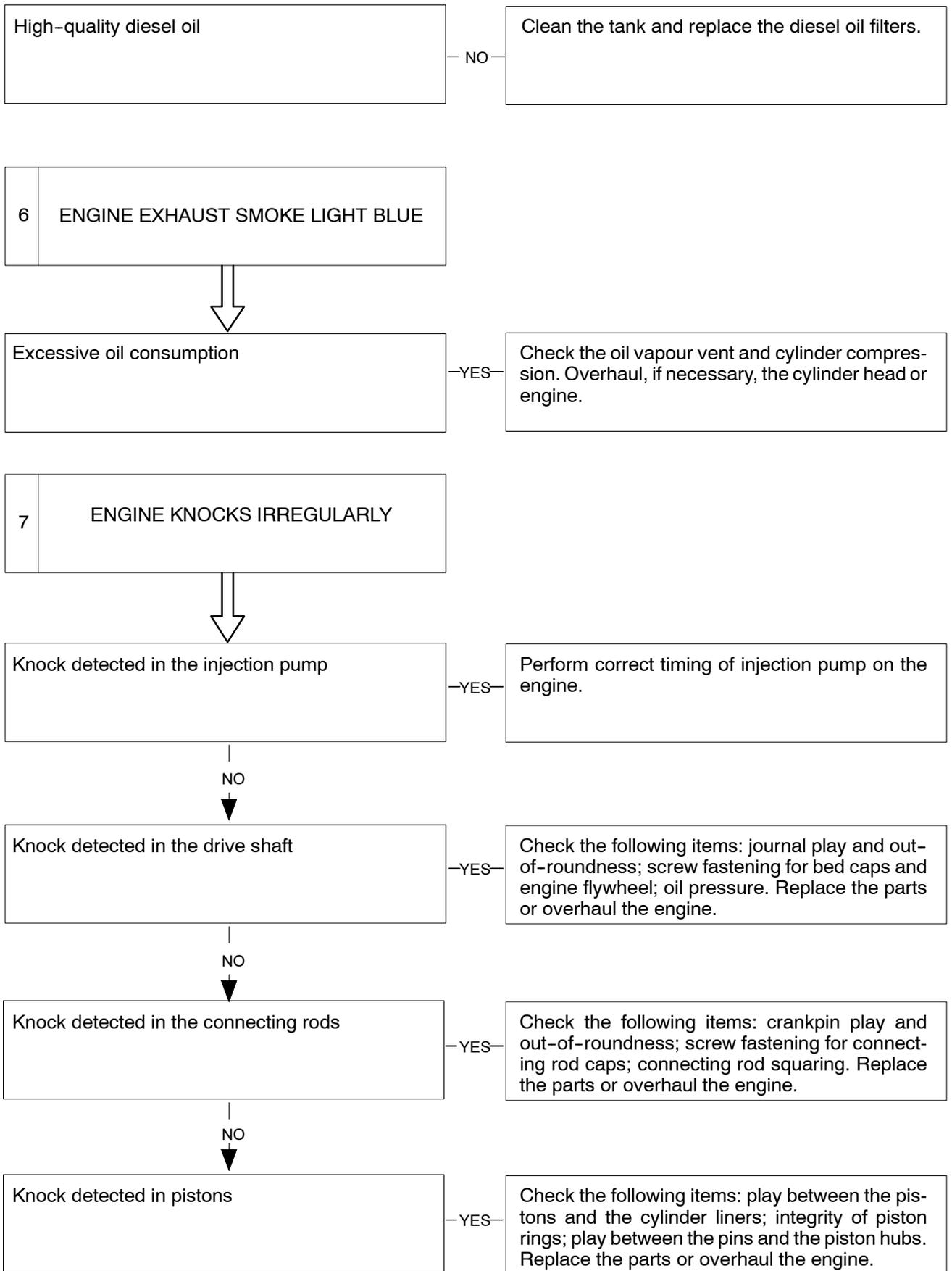
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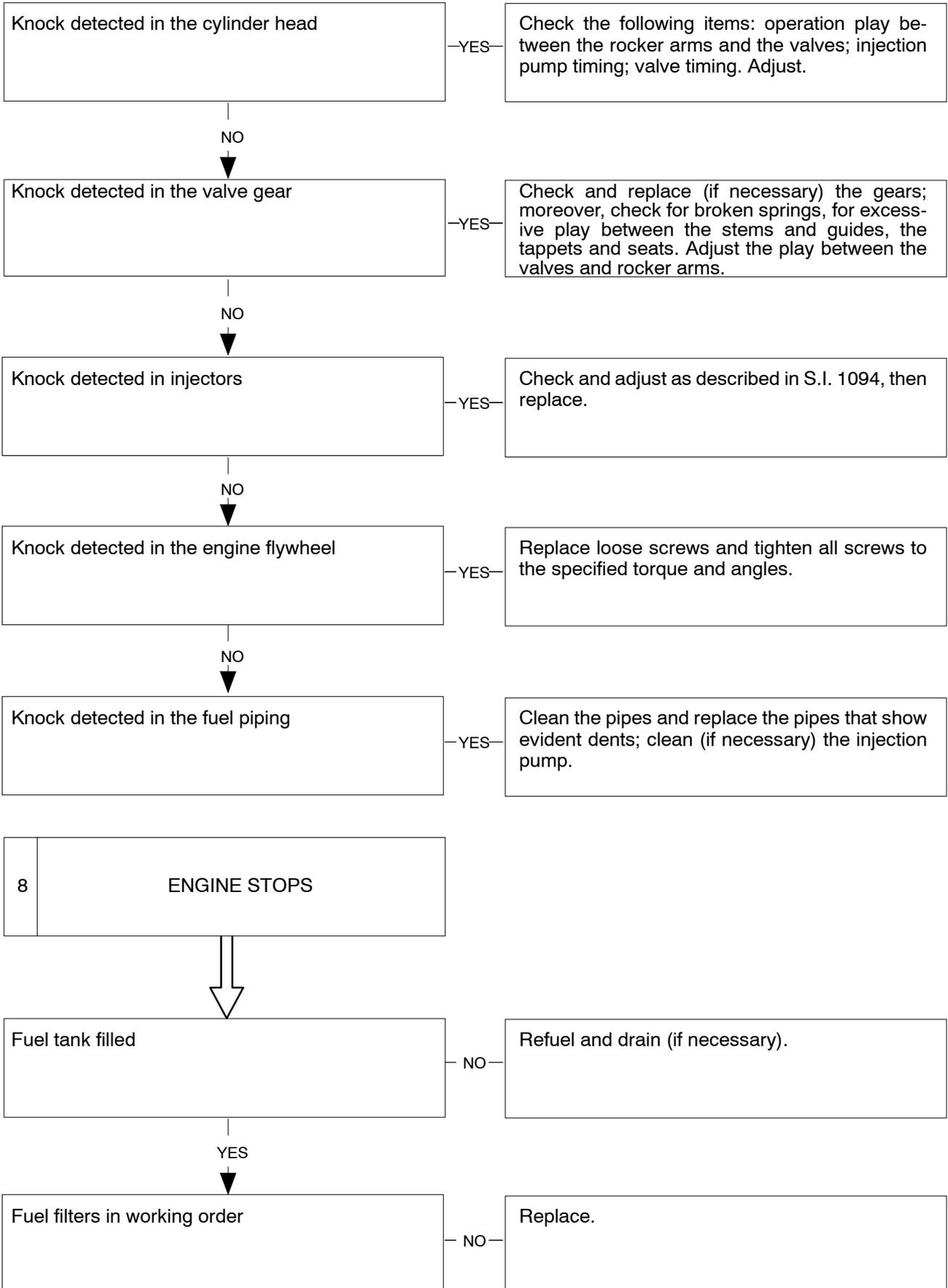
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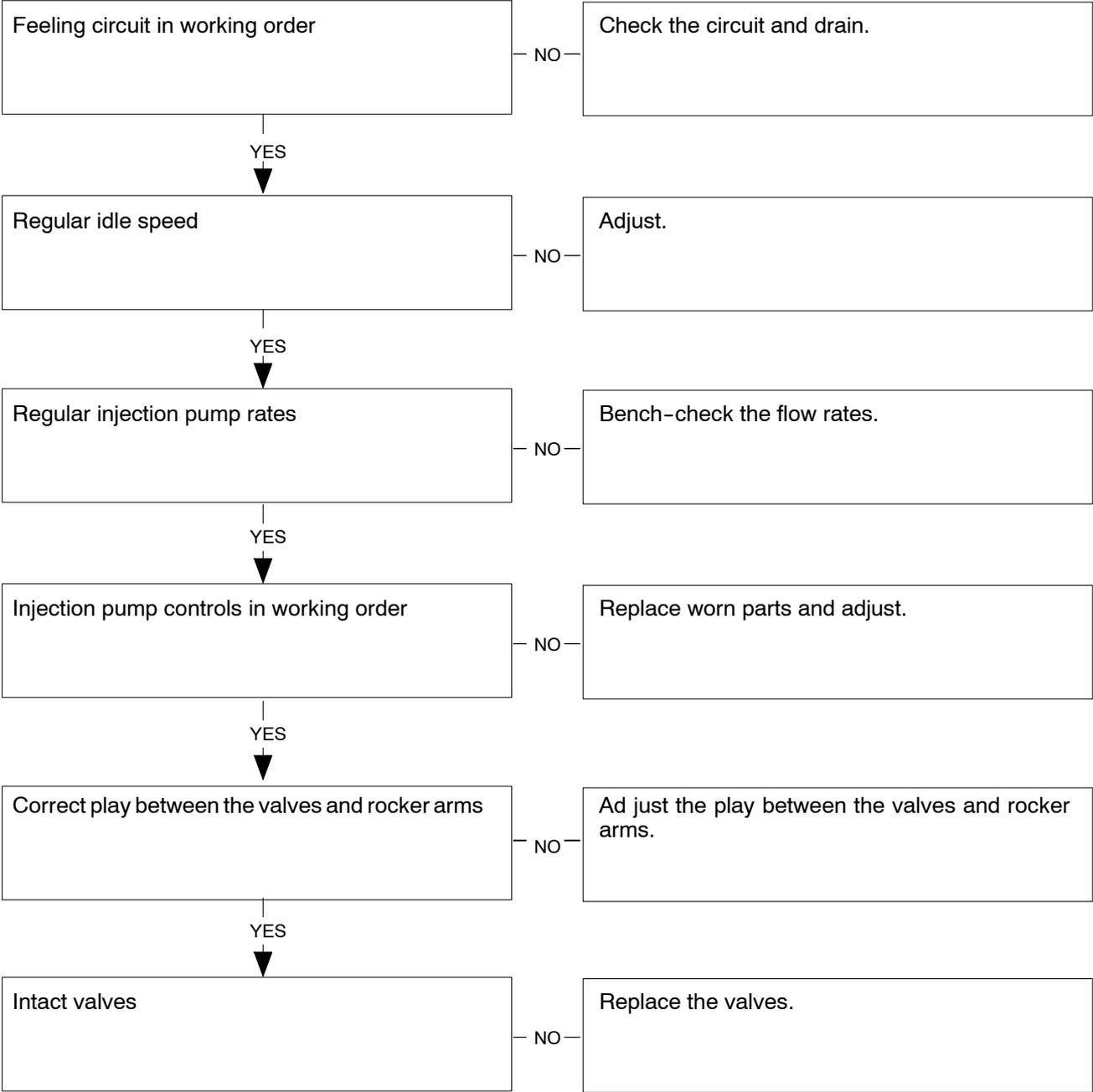
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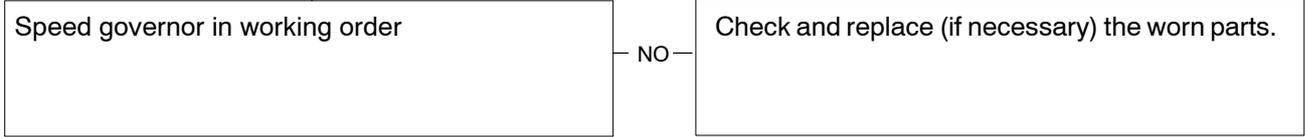
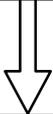


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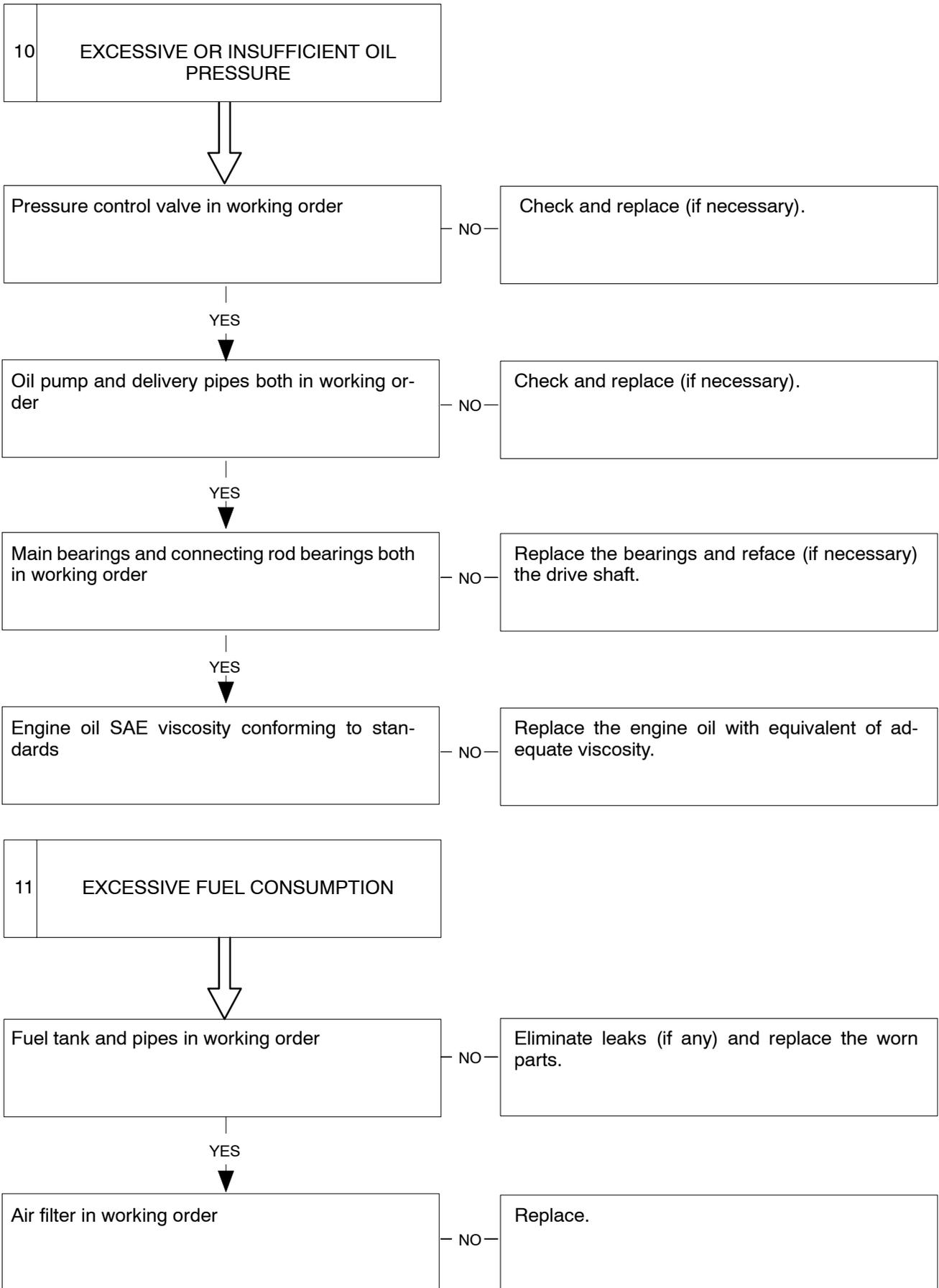
DIAGNOSTICS



9	ENGINE EXCEEDS MAX. REVS NUMBER
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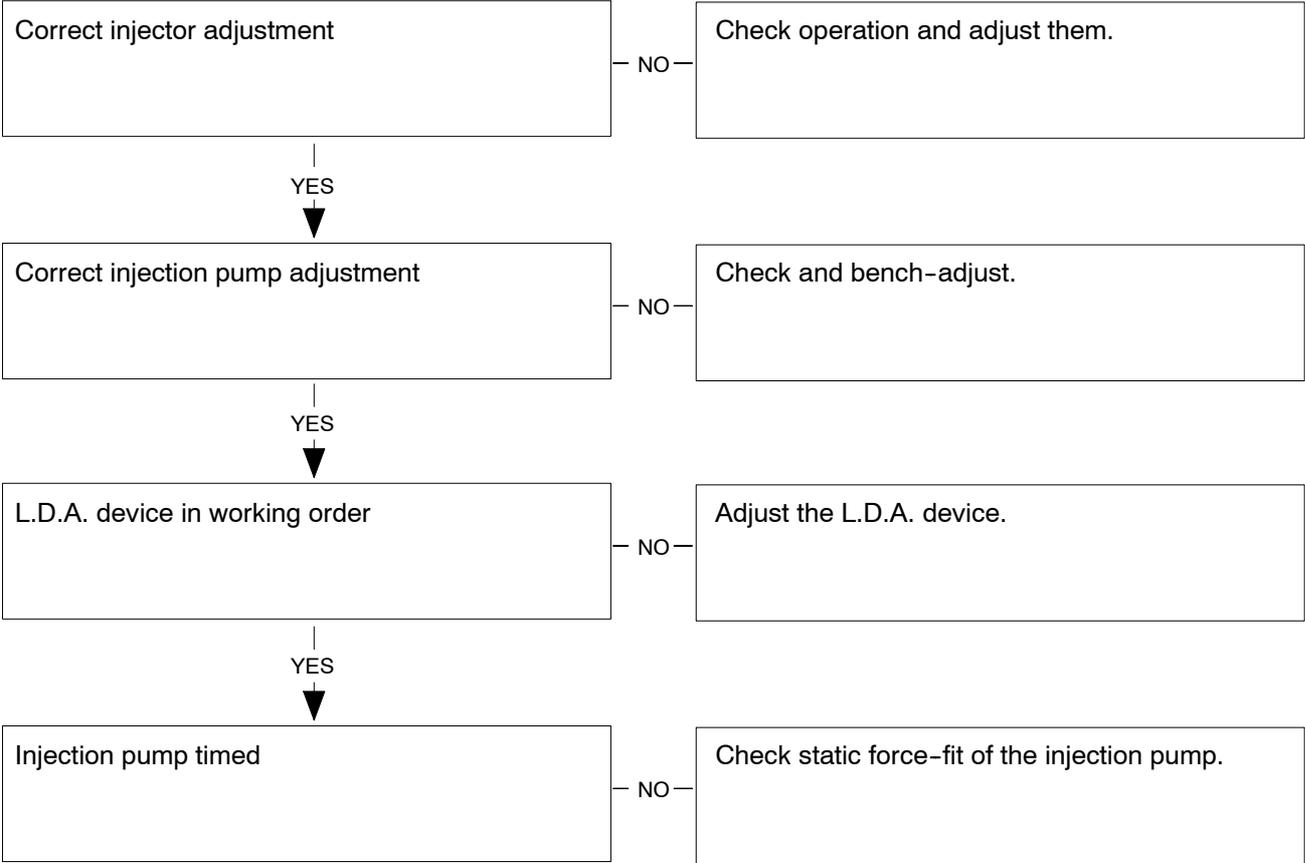


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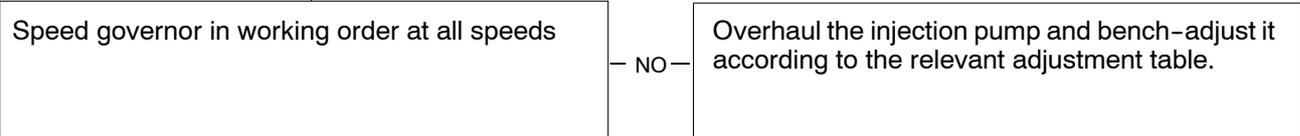
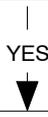
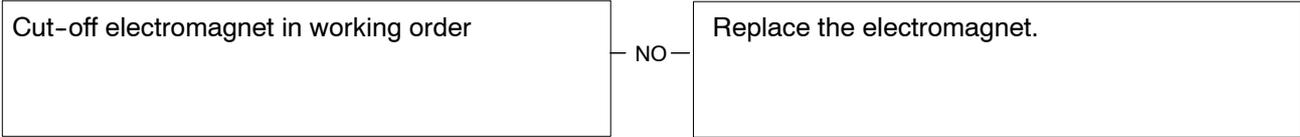
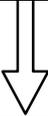


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DIAGNOSTICS



12	ENGINE WON'T STOP
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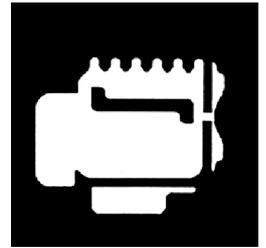


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**DIAGNOSTICS**

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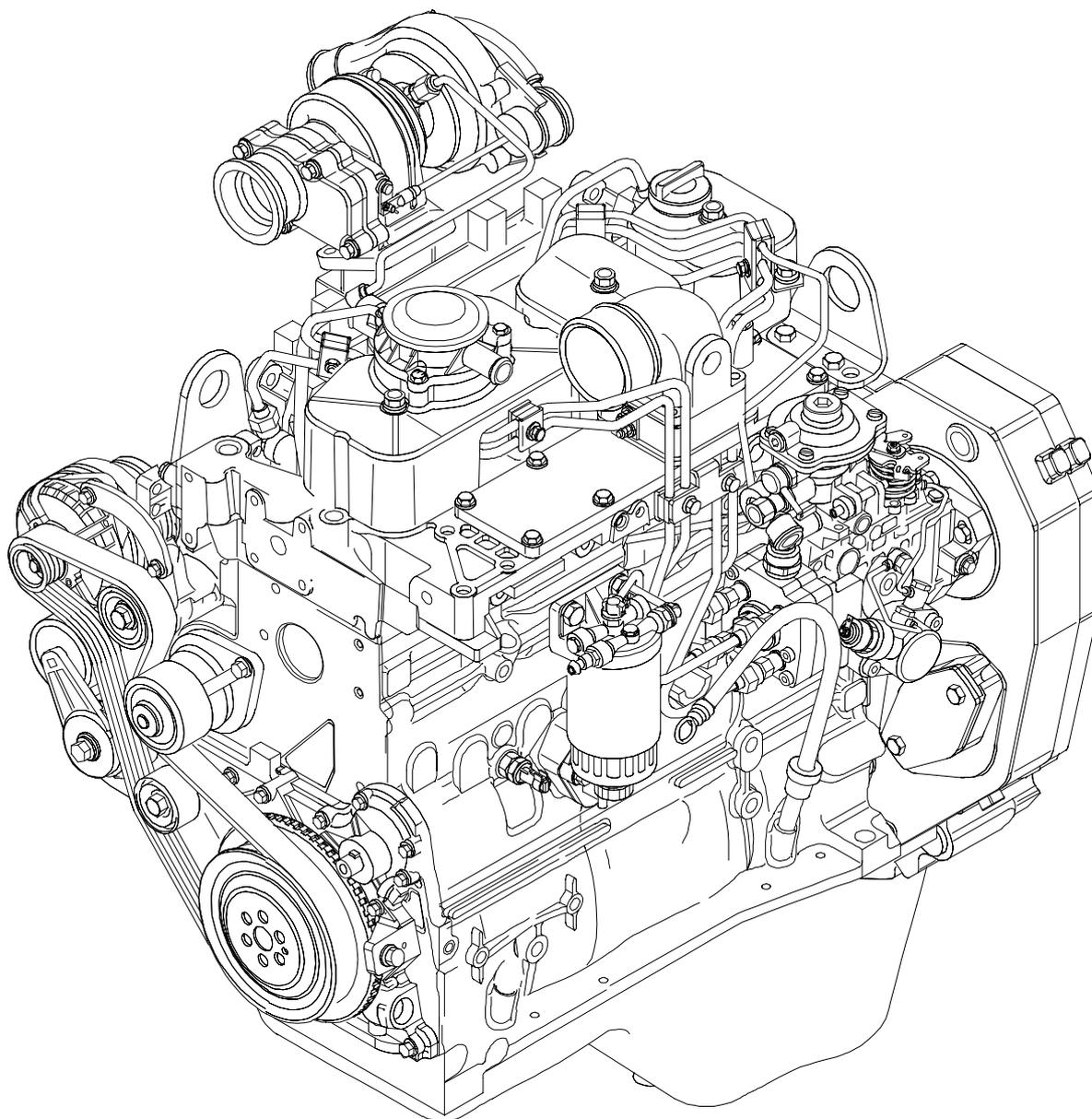
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**ENGINE F4BE0484E OVERHAUL**

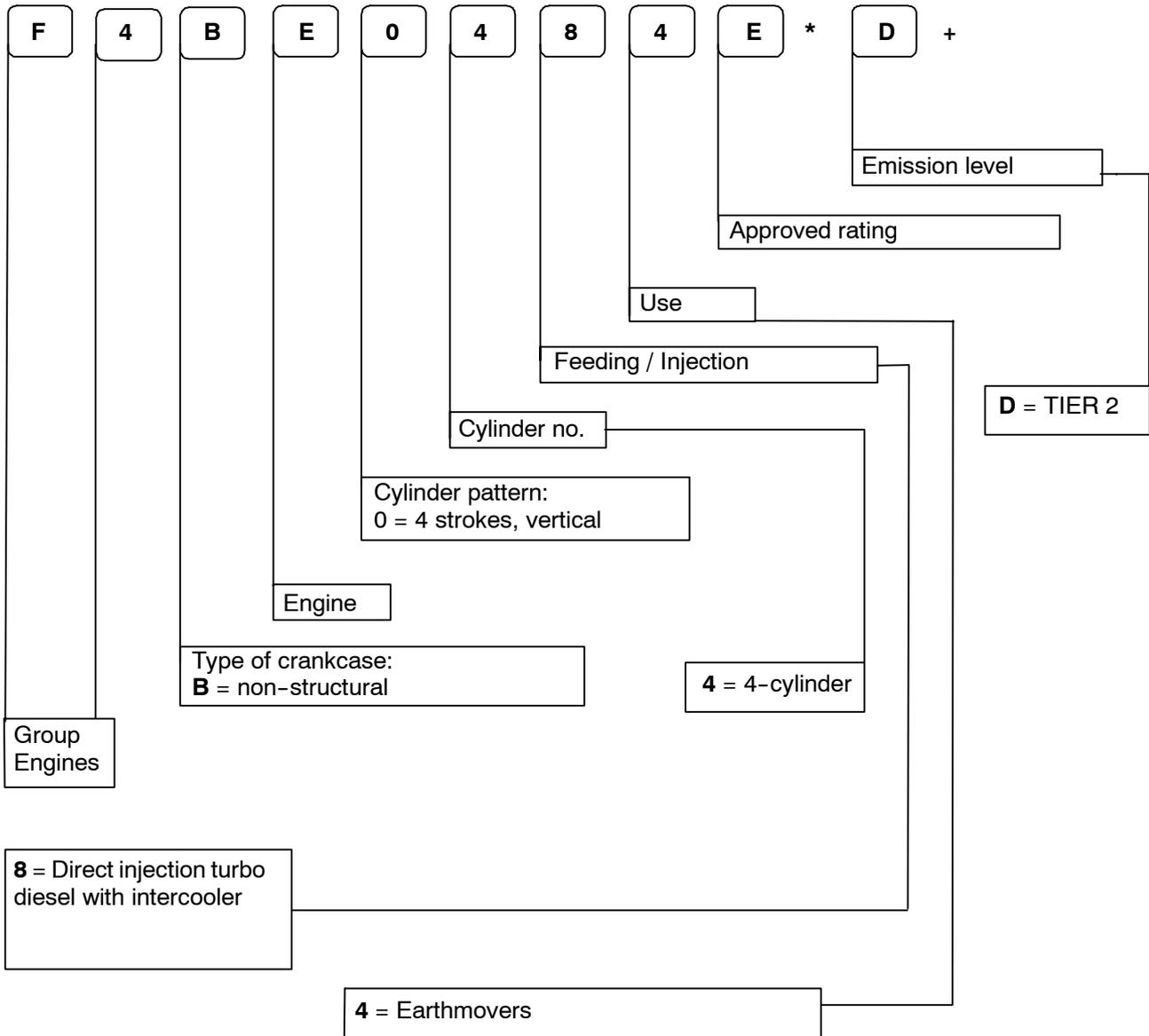
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**ENGINE F4BE0484E**

Figure 1



CODING OF SOURCE ENGINES



X Y Y

X = 6 rotary, 2-valve injection pump  
Y = Engine model

Y Y Y Y Y Y

Manufacturing sequence number

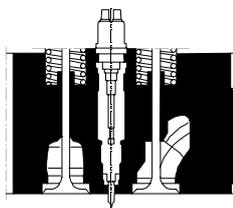
## ENGINE F4BE0484E OVERHAUL

## MAIN ENGINE FEATURES

<b>A</b> →	WX 150
<b>B</b> →	F4BE0484E
<b>C</b> →	*D604
<b>D</b> →	
<b>E</b> →	3922 cm <sup>3</sup>
<b>F</b> →	87 kW 2,000 rpm

**G** →

Direct injection



**H** →

Rotary injection pump

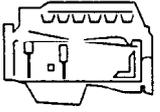
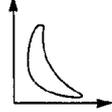
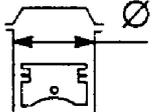
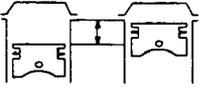
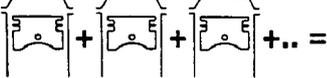
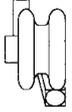
**I** →

**T.A.A.**  
**(Boosted by intercooler)**

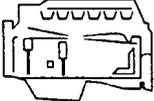
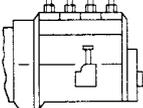
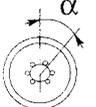
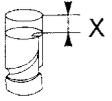
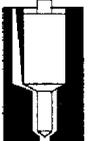
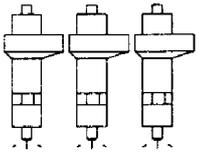
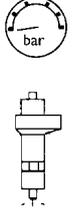
- A** Wheeled excavator code
- B** Type of engine
- C** Engine model
- D** Number of cylinders
- E** Total displacement
- F** Max. power currently available
- G** Type of injection
- H** Injection system
- I** Air supply system

## ENGINE F4BE0484E OVERHAUL

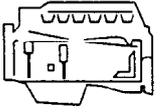
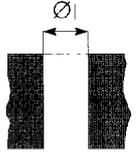
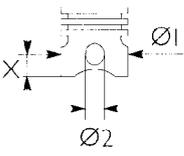
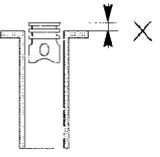
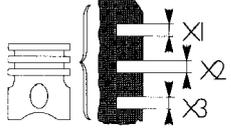
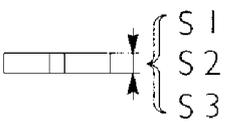
## GENERAL ENGINE FEATURES

	Type	F4BE0484	
		*D601	*D607
	Cycle	4-stroke diesel engine	
	Feeding	Boosted by intercooler	
	Injection	Direct	
	Number of cylinders	In-line, 4-cylinder	
	Bore	mm	102
	Stroke	mm	120
	Total displacement	cm <sup>3</sup>	3922
	Compression ratio	17.5 : 1	
	Max. rating	kW min <sup>-1</sup>	87 2000
	Max. torque	Nm (kgm) min <sup>-1</sup>	450 (46) 1400
	No-load idle rpm	min <sup>-1</sup>	800
	No-load peak rpm	min <sup>-1</sup>	-
	BOOSTING Type of turbocompressor:	With intercooler HOLSET HX25W	
	LUBRICATION	Forced by means of gear pump, pressure relief valve, oil filter	
	Oil pressure with hot engine:	bar	
	at idle rpm		1.2
	at peak rpm	bar	3.8

## ENGINE F4BE0484E OVERHAUL

	Type	F4BE0484E	
COOLING			*D604
Water pump drive: Thermostat: Start of opening: °C		By fluid	
REFUELLING		By means of belt	
 Ambra Super Gold 15W40 10W30	Full filling capacity 1°	81 ± 2	
	- engine sump	litres kg	-
	- engine sump + filter	litres kg	-
		litres kg	
	FEEDING Bosch-type injection	VE4 / 12 F 1000 L	
	Pump setting	0° ± 0.5°	
	Start of delivery	mm	
	Type of nozzle	1	
	Injection sequence	DSL A 145 P603	
	Injection pressure (bar)	1 - 3 - 4 - 2	
		245 bar	

**ENGINE F4BE0484E OVERHAUL****ASSEMBLING PLAY - SPECIFICATIONS**

		Tipo		<b>F4BE0484E</b>	
				<b>*D604</b>	
CRANK GEAR COMPONENTS AND CYLINDER ASSEMBLY				mm	
	Cylinder liners		Ø1	102.01 to 102.03	
	Pistons: supplied with standard spares	Measurement dimension	X	61	
	Outer diameter		Ø1	101.777 to 101.795	
	Pin seat		Ø2	40.006 to 40.012	
	Piston - cylinder liners			0.215 to 0.253	
	Piston diameter		Ø1	0.5	
	Position of pistons from crankcase	X		0.28 to 0.52	
	Gudgeon pin		Ø3	39.9968 to 40.0032	
	Gudgeon pin - Pin seat			0.0028 to 0.0152	
	Type of piston	X1*		2.70	
	Piston ring slots	X2		2.74	
		X3		4.04 to 4.06	
				* measured on Ø of 99 mm	
	Piston rings	S1*		2.567 to 2.618	
		S2		2.560 to 2.605	
		S3		3.975 to 4.000	
				* measured on Ø of 99 mm	
	Piston rings - Slots		1	0.082 to 0.133	
			2	0.135 to 0.180	
			3	0.040 to 0.085	
	Piston rings			0.5	