



**DIAGNOSIS MADE EASY**

**PART OF 496-2121**

## DIAGNOSE CAR PROBLEMS QUICKLY AND RELIABLY USING GATES INTUITIVE QUESTION TREE DIAGNOSTIC PROCESS

SERVICE  
ENGINE  
SOON

The purpose of this booklet is to provide you with more detailed guidance on some specific car problems, that involve the accessory belt drive system (ABDS). The easy-to-follow diagnostic tree structures in this booklet will help you to quickly identify the correct cause of the problem and provide you with a logical flow to the recommended repair procedures!

Is there a **battery** charging problem? .....Go to **1**

Is there a problem with the **engine cooling**? .....Go to **2**

Is there a problem with the **power steering pump**? .....Go to **3**



Is there a problem with the **air conditioning**? .....Go to **4**

Is there **noise** coming from the accessory belt drive system (ABDS)? .....Go to **5**

Has the **belt** been **lost** from the drive? .....Go to **6**

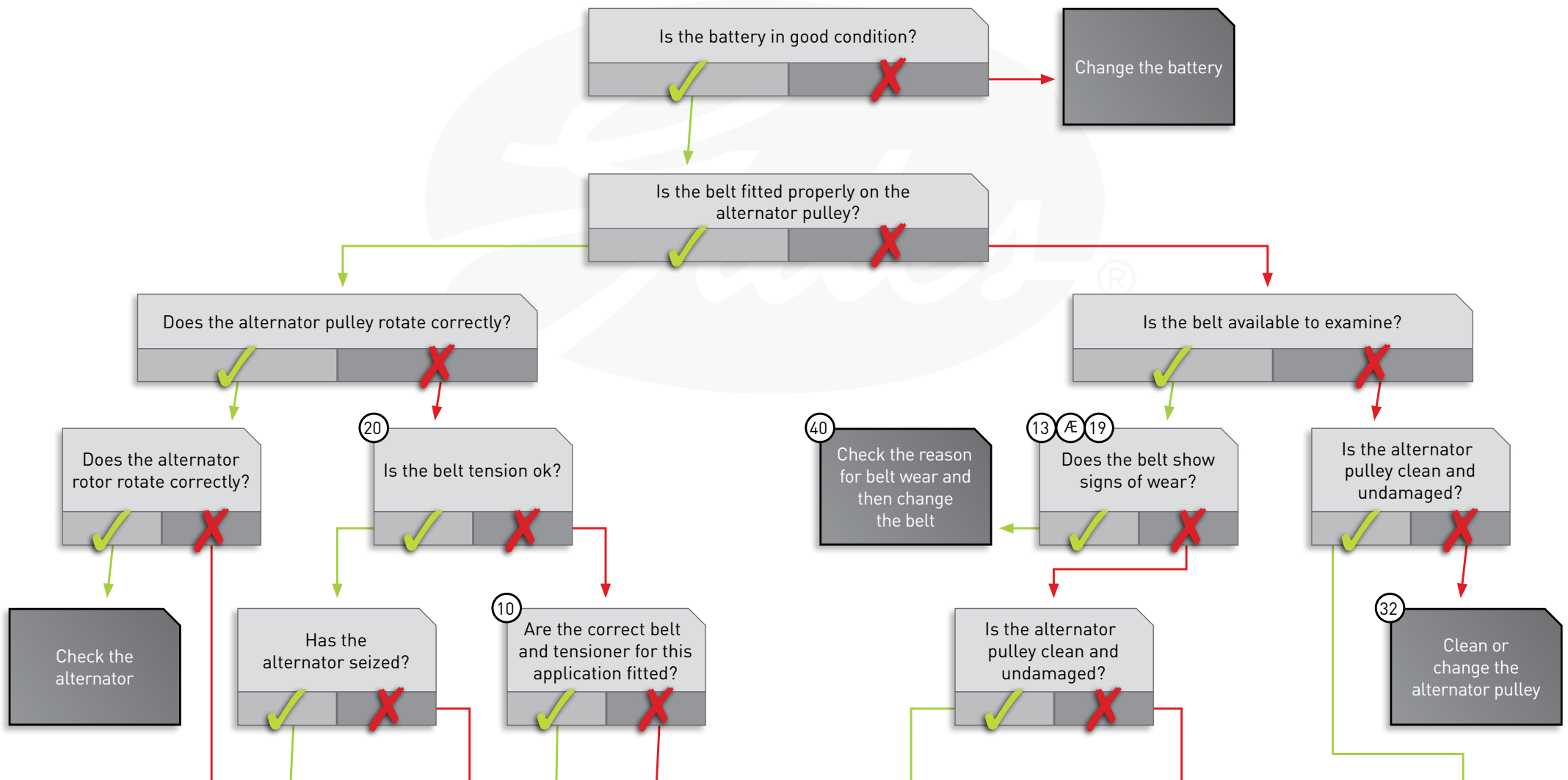
Are you looking for some tips on logical **tension** diagnostics? .....Go to **7**

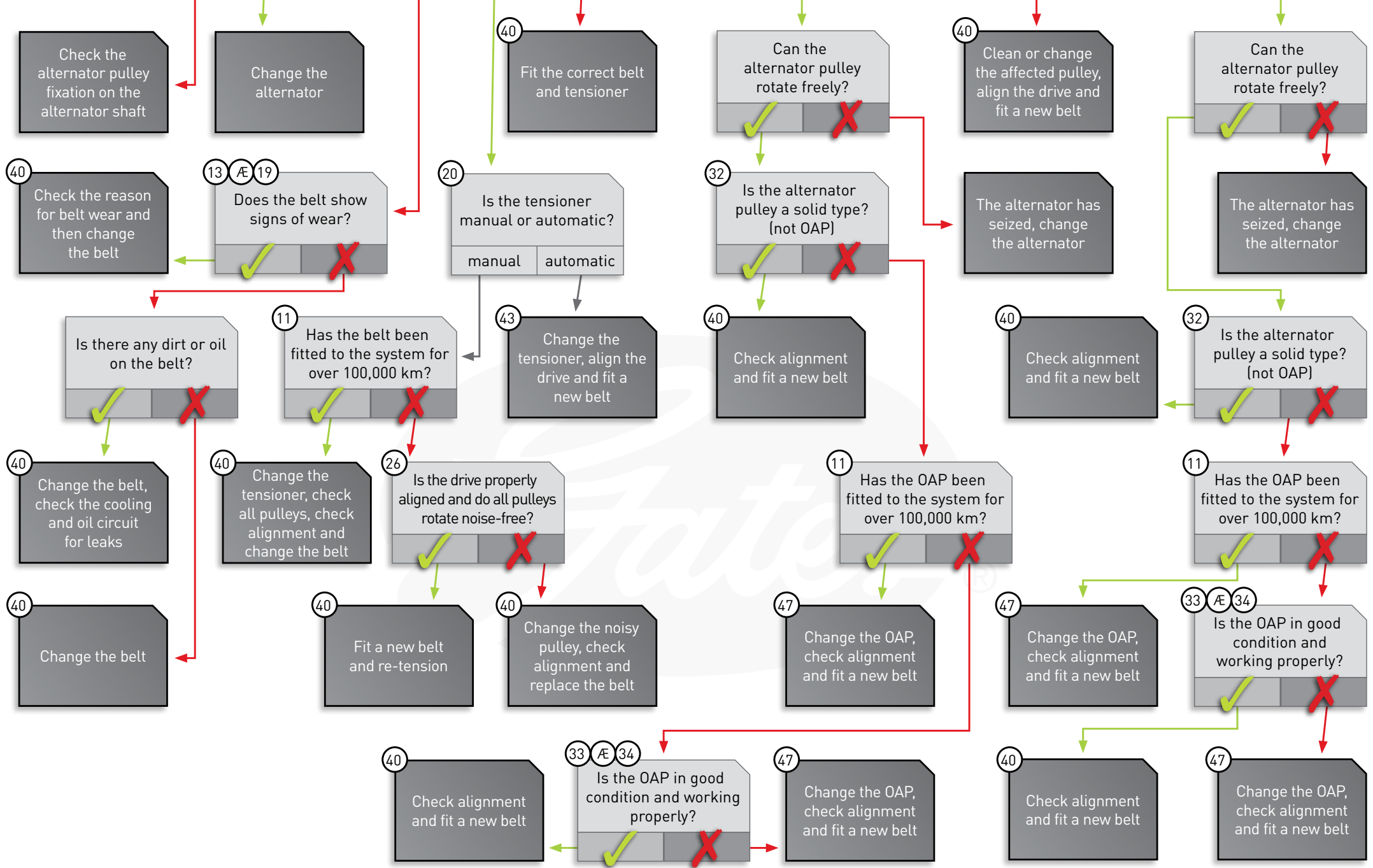
Are you looking for some tips on logical **alignment** diagnostics? .....Go to **8**

Throughout this booklet, we use  symbols to make you aware that more guidelines relating to the topic are to be found in the troubleshooting guide. So wherever you come across the  symbol, be sure to read the corresponding page in the guide!

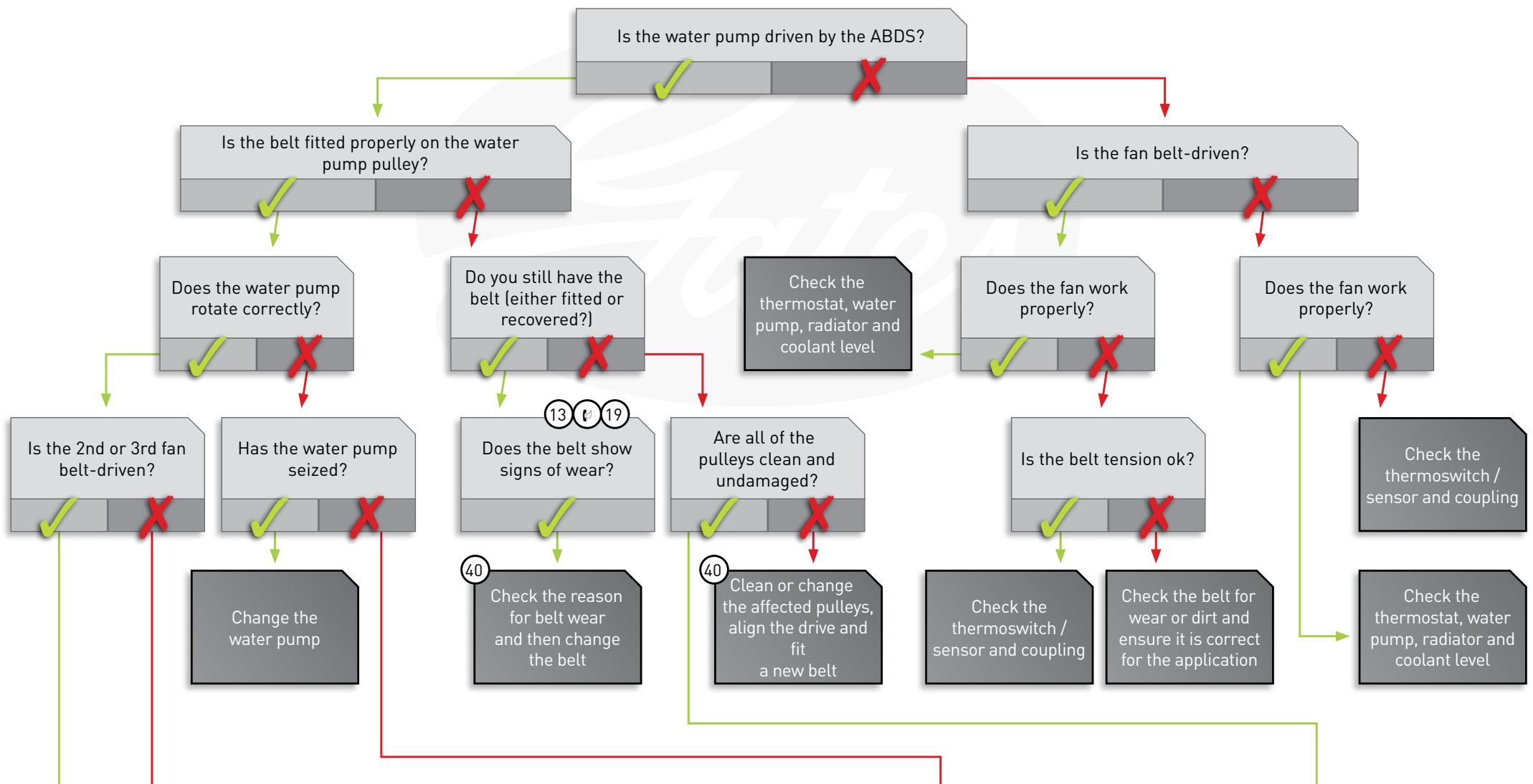
# 1

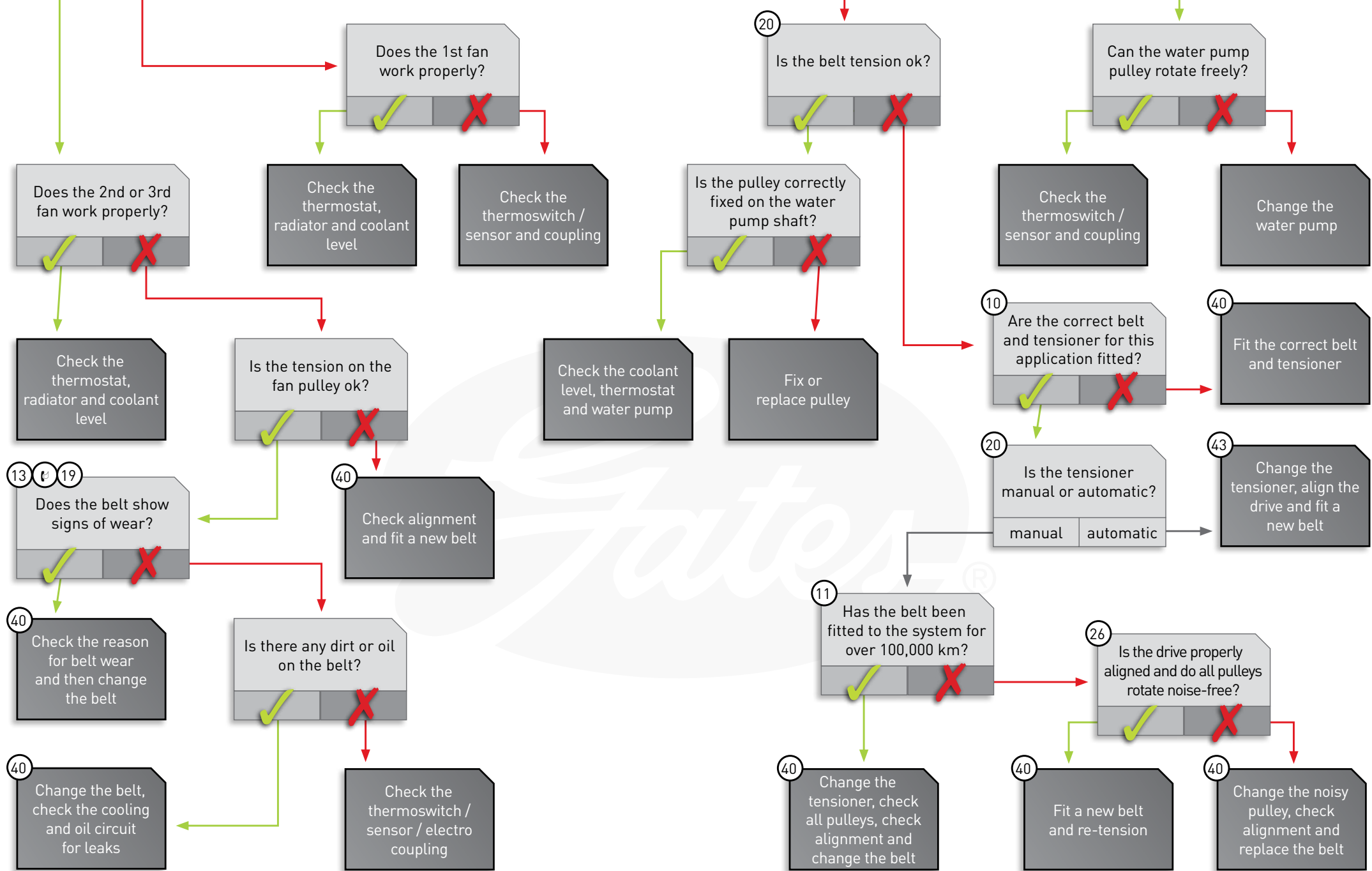
## IS THERE A BATTERY CHARGING PROBLEM?





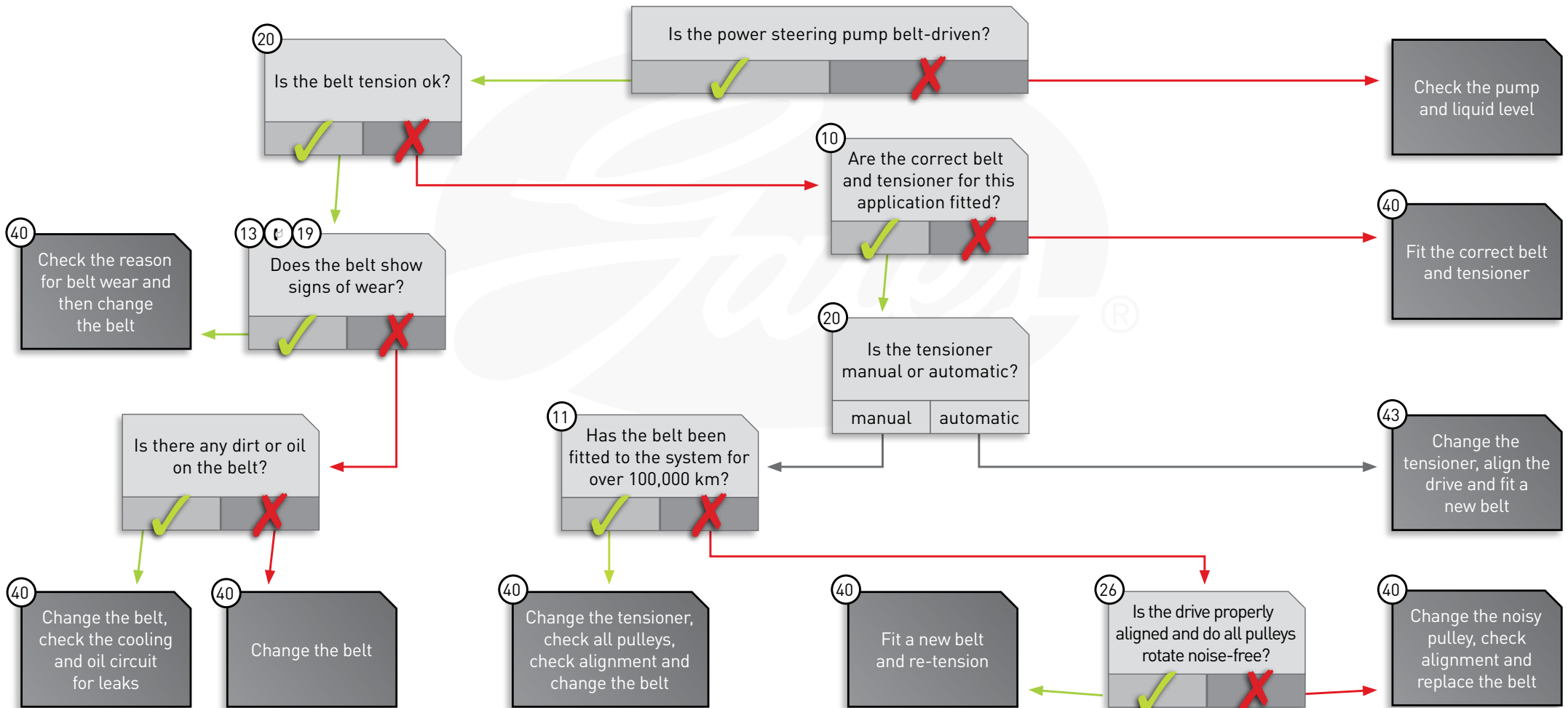
## IS THERE A PROBLEM WITH THE ENGINE COOLING?





# 3

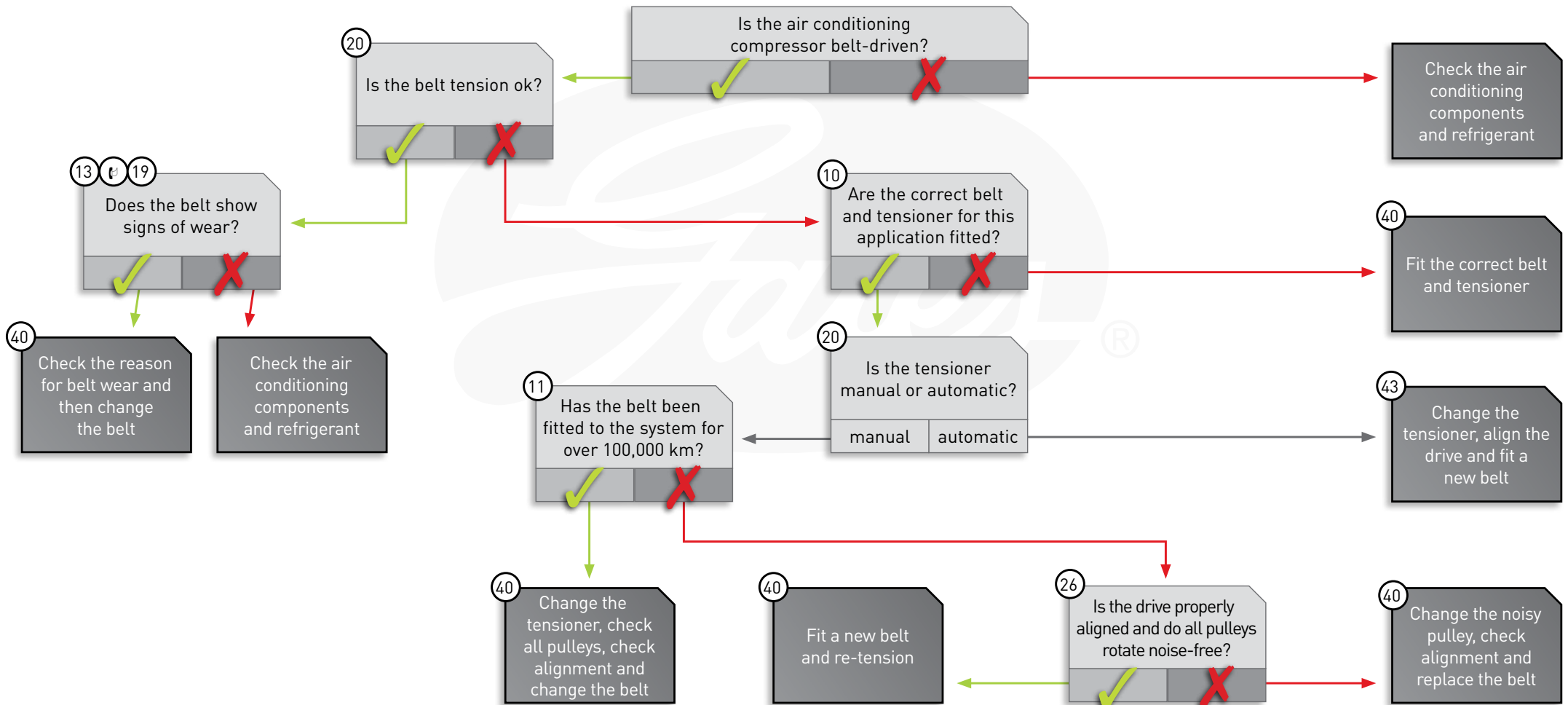
## IS THERE A PROBLEM WITH THE POWER STEERING PUMP?





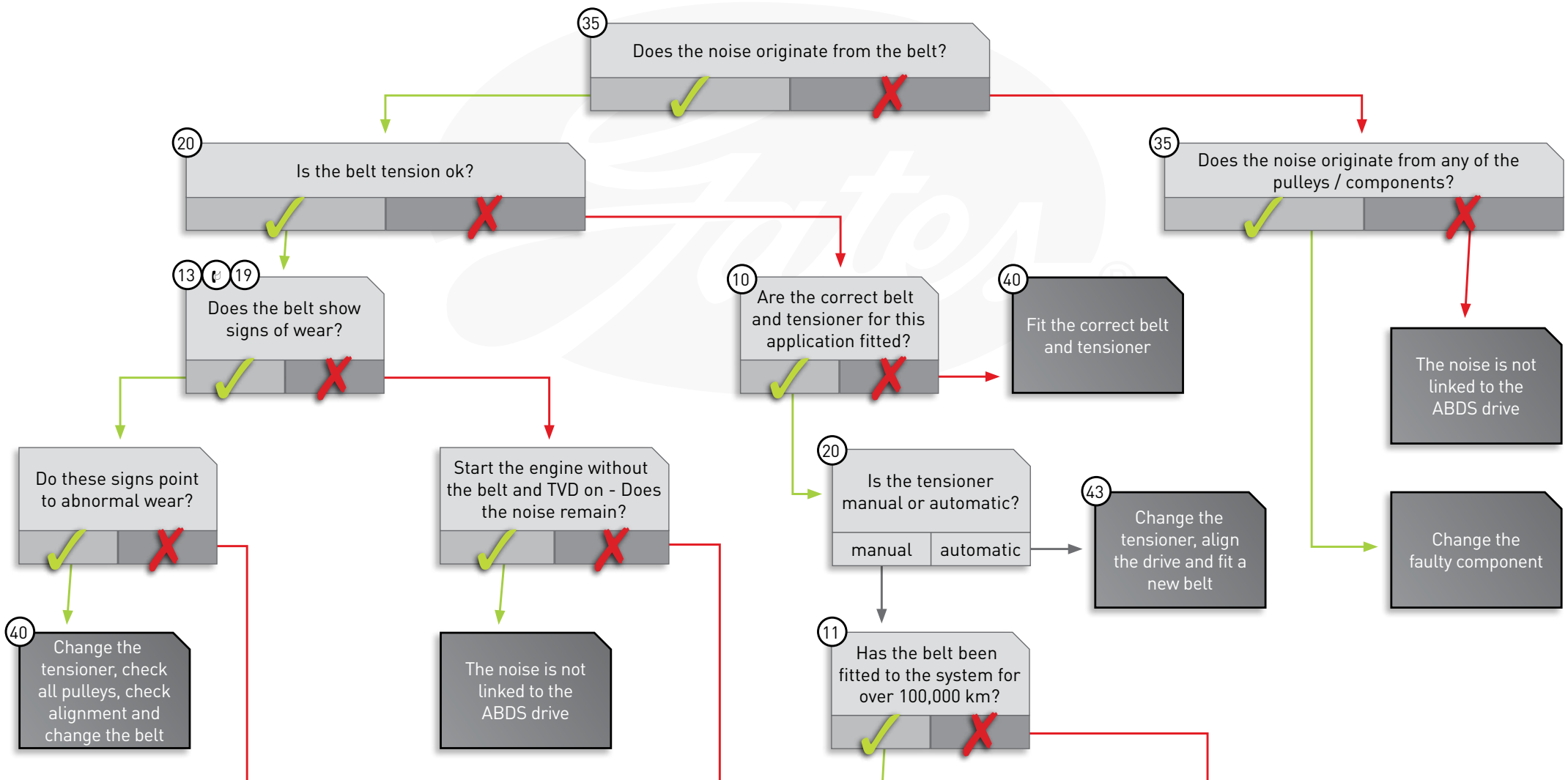
# 4

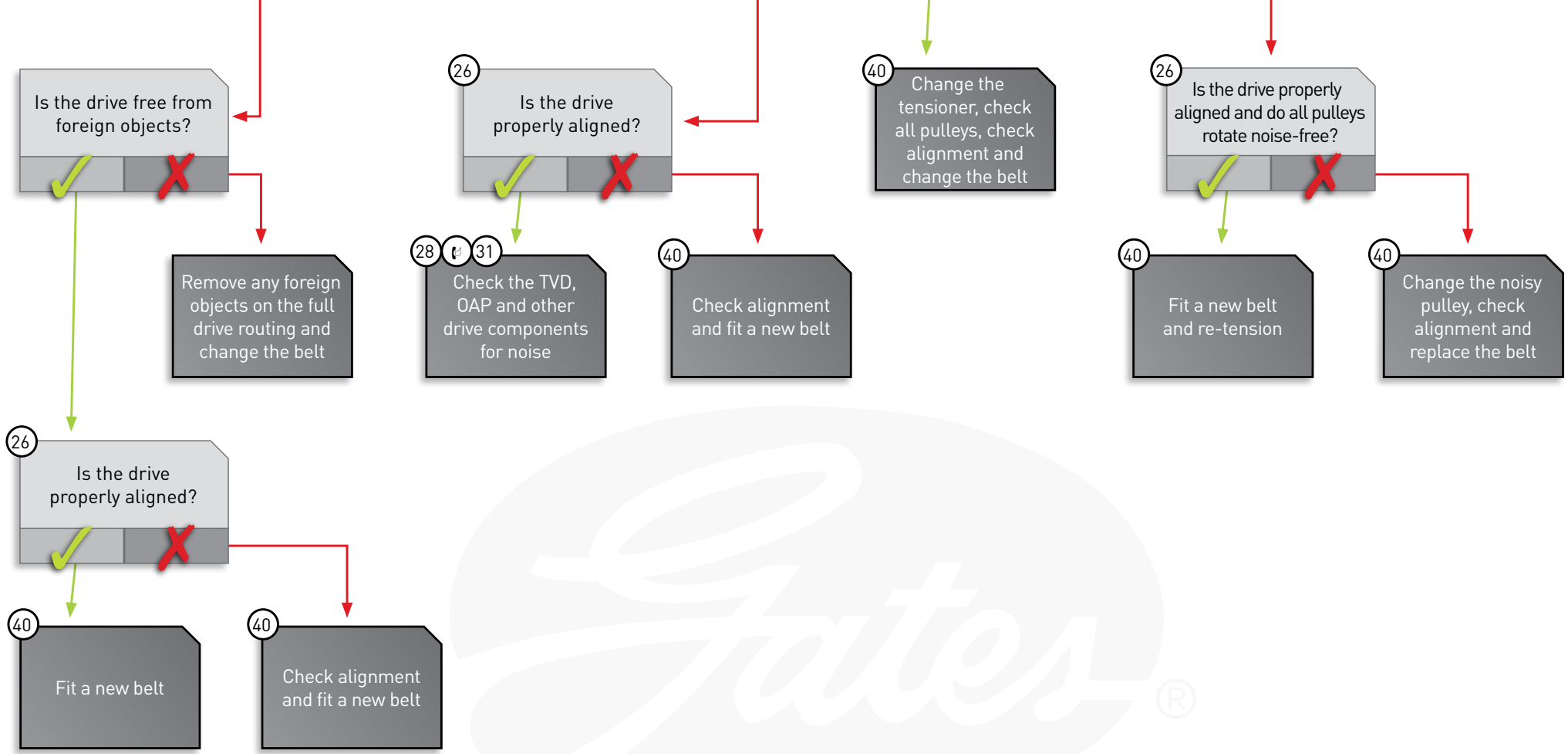
## IS THERE A PROBLEM WITH THE AIR CONDITIONING?



# 5

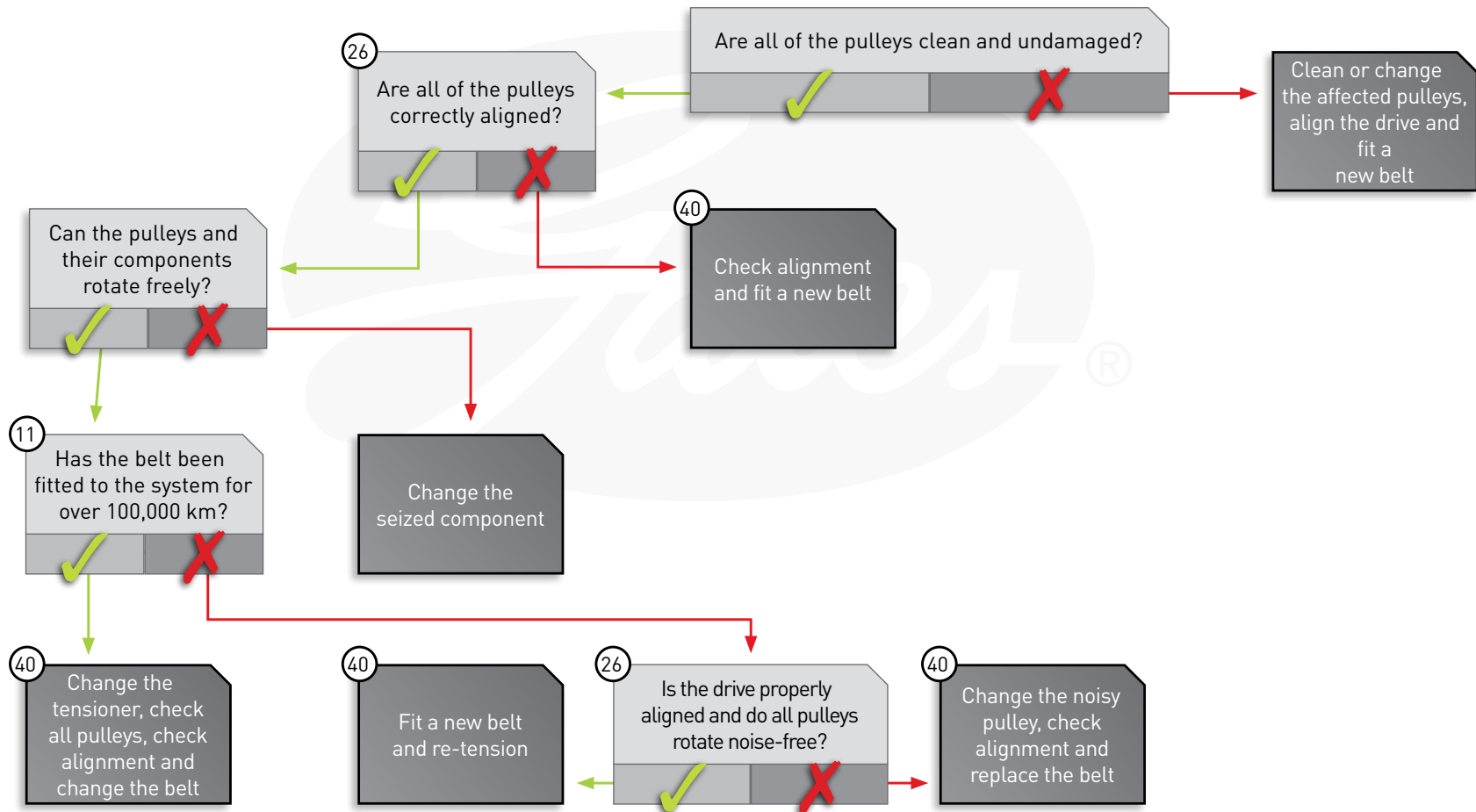
## IS THERE NOISE COMING FROM THE ABDS?





# 6

## HAS THE BELT BEEN LOST FROM THE DRIVE?



# 7

## TIPS FOR LOGICAL TENSION DIAGNOSTICS

- › The logical steps to take if there are no 'known problems'.

Before looking at any of the drive components, check if the correct belt has been used for the application.

STEP	COMPONENT	INDICATION	MOST COMMON FAILURE
1	tensioner	incorrect tension / belt vibration / noise	<b>manual:</b> re-tension / check if pulley is free-wheeling and properly aligned <b>automatic:</b> check wear indicator and wear signs / check alignment / check spring resistance & hard points <b>hydraulic:</b> check wear indicator and wear signs / check alignment / check damper resistance & condition of bushes
2	idler	noise	check if pulley is free-wheeling noise-free / sensitive to misalignment
3	overrunning alternator pulley	noise / tensioner vibration	seized or seizing / only use OE prescribed part
4	torsional vibration damper	noise / tensioner vibration	wear sensitive / check dual-mass flywheel condition
5	water pump	warning light on dashboard	seized or seizing / check alignment / leaking fluid
6	air conditioning	no climate control	compressor clutch pulley sensitive to misalignment
7	servo	stiff steering	problem more common on pressure leaks than on belt side
8	other	variable	misalignment

- › Component friction problems can be detected using an infrared thermometer.
- › As a general rule of thumb, it can be assumed that the required tension for a new belt is 10 kg/rib while for a used belt this should be 6 kg/rib.

# 8

## TIPS FOR LOGICAL ALIGNMENT DIAGNOSTICS

- › Have Gates Laser Alignment Tool (Part Number: 91006) ready to check drive alignment.

STEP	
1	Check the belt for misalignment wear signs
2	Establish if any of the belt-driven components have recently been replaced on the car
3	Start from the most easily accessible pulley
4	Check alignment from one pulley to the next pulley in the drive
5	Check from the top of pulley A to the top of pulley B, and then from the bottom of pulley A to the bottom of pulley B
6	Check alignment while slowly turning the projected pulley
7	Check for play in the pulley while turning it - possible bearing wear!
8	If only two pulleys are accessible, double-check parallel alignment by holding a straight edge against both pulleys



## **GATES KEEPS YOUR KNOWLEDGE UP TO DATE!**

Get immediate access to the cataloguing data, troubleshooting manuals and technical bulletins that are critical in keeping you informed and knowledgeable about today's automotive systems by visiting

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## POWERING PROGRESS™

This booklet should be read in conjunction with the **496-2121** troubleshooting guide and may not be distributed separately.

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