

# Everything you need to know about smart consolidation

How DENSO parts help wholesalers and workshops maximise efficiency



To offer a full-service package to their customers and carry out repairs with the right tools and methods, workshops rely on access to the correct parts, which they receive on a regular basis from their wholesaler. But how can wholesalers ensure they always have the right parts available at short notice, without having to hold too much stock?

**In this publication we will explain how smart consolidation can help solve this problem for wholesalers and how choosing DENSO parts gives workshops the benefits of consolidation while avoiding some of the common pitfalls.**

## What is smart consolidation?

Thanks to continual advancements by parts manufacturers, there is a trend for wholesalers to stock a smaller but just as widely applicable range of parts, enabling them to meet customers' needs while reducing their overheads.

The challenge for these wholesalers comes in working out how far they can reduce their stock without compromising their offering to workshops, or inadvertently introducing issues with fitting or efficacy.

DENSO developed the concept of “smart consolidation” to make decisions easier for wholesalers, and as a result make installation easier for workshops. Smart consolidation occurs when products in a range are merged enough for wholesalers and workshops to benefit, but not so much that installation time is noticeably increased or errors become common.

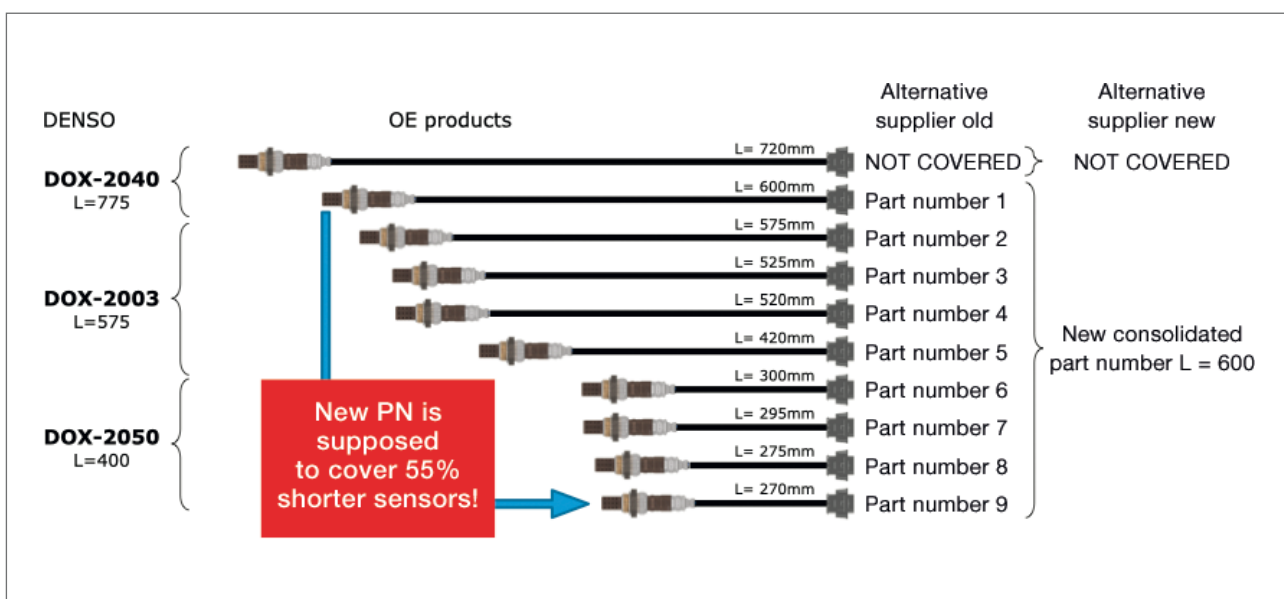
### How does smart consolidation work in practice?

Let’s look at one component where smart consolidation is already at work: Lambda Sensors. Some manufacturers have identified these parts as a target for range consolidation – and with their variety of wire lengths and fit types, it is easy to see why. However, Lambda Sensors are a crucial component for optimising engine performance and reducing a car’s emissions – they need to operate within strict parameters and this cannot be compromised.

DENSO applies the concept of smart consolidation across its Lambda Sensor range, offering a manageable range for wholesalers while retaining comparable specifications and installation times to OE parts. Consider a group of 10 different OE sensors, which all share an identical sensor core, connector type and pinout. The only differences are wire lengths. Here, DENSO selects only three optimised wire lengths, thereby greatly improving the stock efficiency of servicing all related vehicles.

As a result, workshops can ensure maximum vehicle coverage without having to buy a prohibitive amount of stock. Having fewer parts in the workshop makes technicians’ lives easier and the right parts result in efficient and error-free fitting.

### Are there any drawbacks?



In the example on the left, the wire stays below 50% over length in all cases. In the example on the right, it can be more than 100% over length.

Downsides can occur when the range is reduced too much. In the case of the example in the diagram, another manufacturer has taken the concept further and reduced the range all the way down to one wire length. As a result, this length is excessive in many cases and needs to be secured when the car is running (with cable ties, for example). With high temperatures, fast moving parts, and heavy vibrations, wire harness fixation is a safety and reliability issue that DENSO is not prepared to compromise on.

In the example above, an OE sensor of the shortest cited wire length (270mm) would be covered by a DENSO part with a 400mm wire length. The competitor only offers a wire length of 600mm – or 122% over length. Here, the relatively slim benefit of reducing the range by two PNs must be weighed against the greater installation time and reduced reliability that results from having such a large discrepancy between the OE and replacement wires.

Over-consolidation can also incur greater installation time when connecting the sensor to the car. Some manufacturers' sensors, even though they are already fitted with an OEM connector, require the counter-connector on the car's wire harness to be replaced. This requires both a specific tool (to extract the wire terminals from the connector housing) and specific knowledge of the correct sequence of wires, direction of the terminals, and locking method.

In theory, replacing the connector could take only 10 minutes, but if the process does not go perfectly smoothly – such as if the right tool is not available, the counter-connector is hard to reach, or the new connector is not assembled properly – this can easily increase to 30 minutes or even an hour.

In contrast, DENSO uses connectors from the OE supplier, but without key tabs, allowing them to fit the maximum number of car models without counter-connector replacement.

**This is smart consolidation in action: designing the parts for greater flexibility and efficient installation.**

**What about universal fit sensors?**

Universal fit sensors, supplied without a connector so the old sensor's connector can be reused, is the most extreme example of consolidation. Such sensors will always require additional preparation time by cutting the wires to length and splicing them onto the original wire and connector. When done correctly (with the right tools, materials and methods) this provides a perfectly reliable result. However, there are many ways that a less experienced mechanic could make a mistake – such as confusing any of the four wire connections, or using a wrong method of connection (soldering instead of mechanical crimp), wrong equipment or insufficient sealing.

If any of the above problems occur, it goes without saying that the sensor will not work properly, which will be noticeable in the car's driveability and fuel consumption.

**Why choose a manufacturer that practises smart consolidation?**

When making their buying decisions, workshops should consider the costs of installation time and rectifying any errors, not just the initial costs of the parts.

The DENSO Lambda Sensor range is optimised for smart consolidation: maximising benefits for wholesalers and technicians without incurring negative impacts. Not only do the sensors themselves match strict quality standards, the segmentation of the range confers the maximum possible benefits, calculated across the entire life cycle of a product from purchase to installation to use, while maximising vehicle reliability.

**Further details of DENSO's Lambda Sensor range are available online at [www.denso-am.eu](http://www.denso-am.eu) or from your local DENSO Aftermarket contact.**

**DENSO EUROPE B.V.**

Hogeweyselaan 165 | 1382 JL Weesp | The Netherlands  
Tel. +31 (0)294 - 493 493 | Fax. +31 (0)294 - 417 122

[www.denso-am.eu](http://www.denso-am.eu)  
[www.denso-am.co.uk](http://www.denso-am.co.uk)

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