

SINGLE WIRE SEALS & CAVITY PLUGS

RELIABLE, SAFE AND VALIDATED SOLUTIONS FOR AUTOMOTIVE SEALED CONNECTOR SYSTEMS



Single Wire Seals & Cavity Plugs

TE Connectivity's (TE) broad portfolio offers a variety (>180) of different seals and cavity plugs for various wire sizes and connector cavities designed for automotive connector systems. They effectively prevent contaminants from entering the connectors, enabling safe and reliable connections.

Thanks to our global manufacturing footprint and integrated supply chain, TE offers local-to-local supply for complete one-stop-shop sealed connector systems (terminal, connector, seal, and cavity plug). In addition, TE also provides family/mat seals, radial seals to complete your automotive connector requirements.

Single wire seals (SWS) have three different interfaces that use a multi-lip configuration that creates layers of redundant sealing. SWS elements are generally made of liquid silicon rubber that offers high mechanical resistance and can work in a wide window of operating temperatures. The material hardness is typically specified as 50-60 Shore A (ShA) durometer and is optimal in providing the necessary compression, tear resistance, and durability needed for automotive applications.

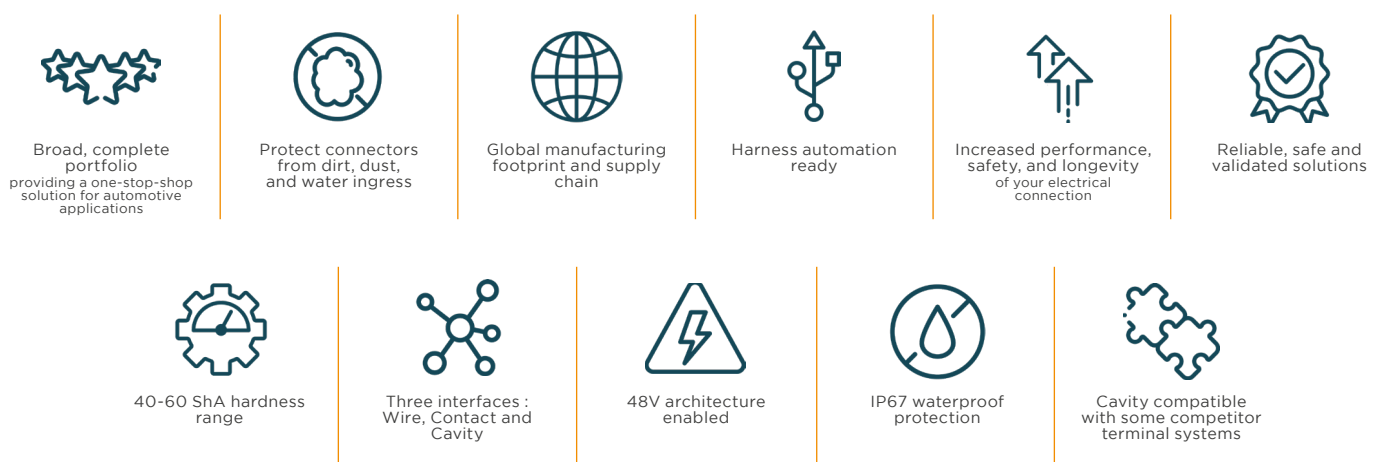


APPLICATIONS

Ideal for harsh environment automotive applications that are required to support:

- Vibration
- Elevated temperatures and high current capabilities
- Wire-to-wire, wire-to-board and wire-to-device
- Powertrain systems
- Safety systems
- Door-to-body
- Driver information
- Convenience and entertainment
- Chassis systems

ONE-STOP-SHOP SOLUTION PROVIDING A COMPLETE SEALED AUTOMOTIVE CONNECTION SYSTEM ADDRESSING ALL PERFORMANCE AND SAFETY REQUIREMENTS WHILE HELPING REDUCE SUPPLY CHAIN COMPLEXITY.



Single Wire Seals (SWS)

- Multi-lip configurations creating three layers of redundant sealing.
- Silicon rubber offers a high mechanical resistance in numerous operating temperatures.
- Material hardness specified at 50-60 Shore A (ShA) durometer providing optimal compression, tear resistance and durability required.
- Lubrication for wire passage through the seal to reduce damage when inserted into the cavity.



Single Wire Seals (SWS) consist of three sealing interfaces:

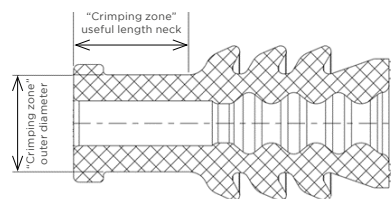


SEAL-TO-WIRE

The SWS is automatically placed on the wire where the outer diameter is within a well-defined range. This wire size is linked to the hole dimension of the SWS and is smaller in diameter to have geometrical interference needed to create the sealing. Seal geometry with two to three lips is generally adopted to provide a point-distributed sealing pressure against the cable.

This geometry allows three main advantages:

- Multiple sealing surfaces are better than a continuous sealing surface due to possible cable shape defects.
- The inner lip profile assures good sealing even when the wires are bent.
- Fluid pressure drops occurs from the first lip to the second lip. For this reason, fluid infiltration is avoided.



Seal-to-Contact Details

SEAL-TO-CONTACT

The seal is crimped onto the contact. The outer diameter of the "crimping zone", the useful length of the neck where the terminal crimp hugs the silicone, and the presence or not of a collar (defined by design) are important parameters to ensure the contact barrels close and retain the SWS without generating cuts on the surfaces. The crimp quality is fundamental to ensure a proper seal-to-contact interface.




SEAL-TO-CAVITY

The sealed contact is inserted into the cavity. The difference between the outer diameter of the seal and the cavity diameter generates a radial compression of the rubber element and the consequent sealing pressure at the interface. This interference causes additional closure pressure on the wire interface increasing the tightness level towards the cable.


Single Wire Seals & Cavity Plugs

3.00 – 3.99mm Cavity Diameter Product Family




Part Number	Cavity Diameter	Wire Cross Section (mm ²)	Wire Diameter (min. mm)	Wire Diameter (max mm)	Hardness Shore "A"	Color
967067-2	3.45	0.2 - 0.35	0.9	1.4	50	Yellow
967067-1	3.45	0.5 - 0.75	1.4	1.9	50	Green
963530-1	3.6	0.5 - 0.75	1.4	1.9	50	Gray
964971-1	3.6	0.35 - 0.5	1.2	1.6	50	Black
964972-1	3.6	1	1.9	2.4	50	Yellow
2297817-1	3.58	0.5	1.4	1.7	50	Green
2297819-1	3.58	1	1.9	2.1	50	Yellow
2098582-1	3.6	1.5 - 2.00	1.35	1.9	50	Yellow

4.00 – 4.99mm Cavity Diameter Product Family



Part Number	Cavity Diameter	Wire Cross Section (mm ²)	Wire Diameter (min. mm)	Wire Diameter (max mm)	Hardness Shore "A"	Color
963142-2	4	0.2 - 0.35	0.9	1.3	50	Gray
963142-1	4	0.5 - 0.75	1.4	2.1	50	Black
963142-3	4	1.5 - 2.00	1.4	2.1	50	Blue
184139-1	4.4	0.35 - 0.5	1.2	1.7	40	Blue

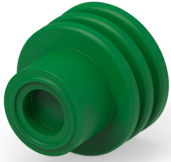
5.00 – 6.99mm Cavity Diameter Product Family



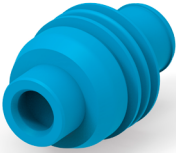
Part Number	Cavity Diameter	Wire Cross Section (mm ²)	Wire Diameter (min. mm)	Wire Diameter (max mm)	Hardness Shore "A"	Color
828905-1	5.2	0.5 - 2.5	2.2	3	50	White
281934-4	5.5	0.35 - 0.5	1.2	1.6	50	Green
281934-2	5.5	0.35 - 0.5	1.7	2.4	50	Yellow
284863-1	5	0.35 - 1.0	1.2	2.1	50	Orange
963294-1	5.2	0.35 - 1.0	1.2	2.1	50	Blue
828904-1	5.2	0.35 - 1.0	1.2	2.1	50	Light Blue
828904-2	5.2	0.35 - 1.0	1.2	2.1	50	Blue
828920-1	5.4	0.35 - 1.0	1.2	2.1	50	Gray
967610-1	6.4	0.35 - 1.0	1.4	2.1	50	Gray
281934-3	5.5	0.35 - 0.5	2.5	3.3	50	Red
2236402-1	6.4	1.5 - 2.5	2.2	3	50	Yellow
828921-1	5.4	1.0 - 2.5	2.1	3	50	Yellow
828985-1	6.4	2.5 - 4.0	3	3.7	50	Green
967609-1	6.4	1.5 - 2.5	2.2	3	50	Yellow

Single Wire Seals & Cavity Plugs

7.00 - 9.99mm Cavity Diameter Product Family

	Part Number	Cavity Diameter	Wire Cross Section (mm ²)	Wire Diameter (min. mm)	Wire Diameter (max mm)	Hardness Shore "A"	Color
	1719043-1	8.48	4.0 - 6.0	4	4.5	50	Green
	1394512-1	8.48	4	3.4	3.7	50	Blue

10.00 - 14.99mm Cavity Diameter Product Family

	Part Number	Cavity Diameter	Wire Cross Section (mm ²)	Wire Diameter (min. mm)	Wire Diameter (max mm)	Hardness Shore "A"	Color
	1544970-2	10.5	6.0-7.0	4.1	5	50	Blue
	1544970-3	10.5	10	5.1	6	50	Yellow
	1544316-1	10.5	3.0 - 6.0	3.2	4.1	50	Green
	1544970-1	10.5	2.5 - 5	2.65	4	50	Brown
	1544316-2	10.5	7.0 - 10.0	4.9	5.9	50	Orange
	1544664-1	10.5	3.0 - 6.0	3.1	4.2	50	Green
	1544664-2	10.5	7.0 - 10.0	4.6	5.7	50	Orange



Cavity Plugs

TE's cavity plugs are used to seal a single connector cavity where no contact is used and can be used in either female or male housings with some that are cavity compatible with competitor terminals. The geometrical profile is fully sealed from the single wire seal element with the exception that it does not have an inner hole for wire.

Rubber material selection is very often limited to the silicone rubber with a ShA hardness range that is generally between 50 and 60; lubricant in the rubber raw material is generally not requested to increase the seal retention into cavity, as there is not any mechanical constraint for this rubber element.



- Silicon rubber material selection with a ShA hardness ranging between 50-60.
- High level seal retention into cavity.

3.00 – 3.99mm Cavity Diameter Product Family

	Part Number	Cavity Diameter (mm)	Material	Hardness Shore "A"	Color
	967056-1	3.45	Silicon	60	Blue
	963531-1	3.6	Silicon	50	White
	1-1452424-1	3.6	PA	50	Brown
	1394871-1	3.45	PA GF	50	Black
	2208113-2	3.6	PA66	50	Green
	963531-2	3.6	Silicon	50	White

4.00 – 4.99mm Cavity Diameter Product Family

	Part Number	Cavity Diameter (mm)	Material	Hardness Shore "A"	Color
	963143-1	4	Silicon	60	White
	2822357-1	4.4	Nitrile Butadiene Rubber	50	Black

5.00 – 6.99mm Cavity Diameter Product Family

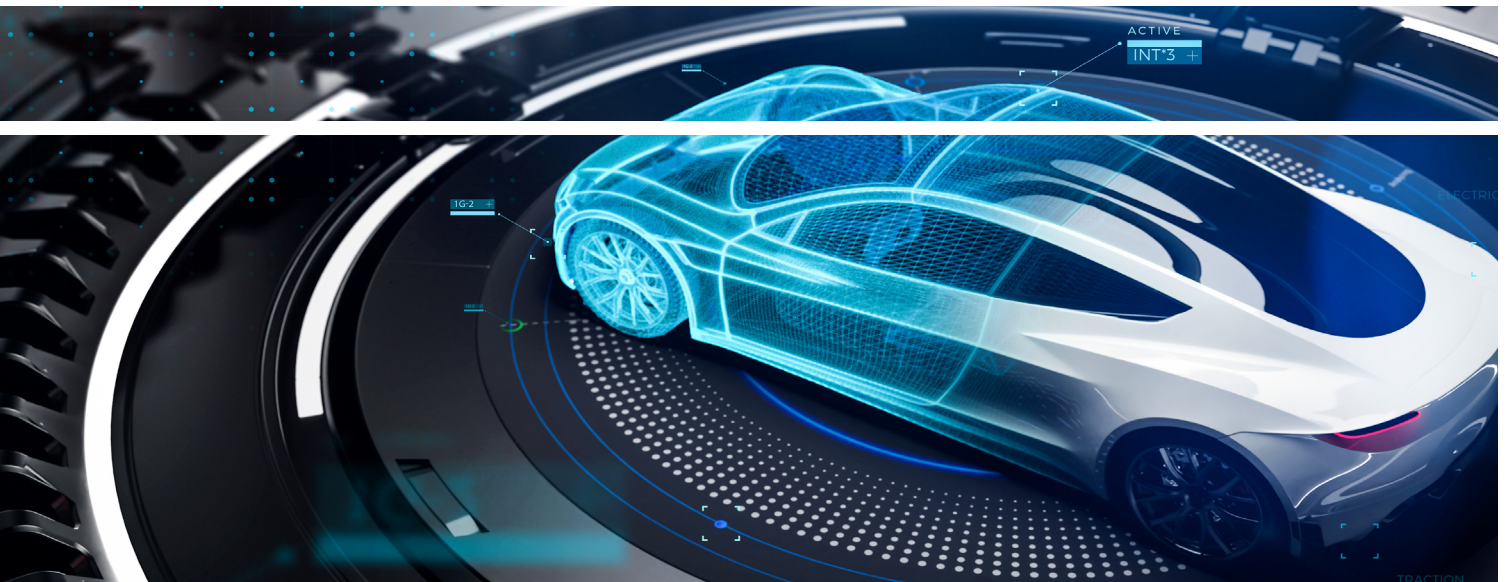
	Part Number	Cavity Diameter (mm)	Material	Hardness Shore "A"	Color
	828922-1	5.4	Silicon	50	Natural

7.00 – 9.99mm Cavity Diameter Product Family

	Part Number	Cavity Diameter (mm)	Material	Hardness Shore "A"	Color
	967652-1	8.5	Silicon	50	Natural

NOTES





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