

# VACUFILL™ Jr. with Universal Radiator Cooling System Pressure Adapter Kit

Part Number: 580000



## OWNER'S MANUAL (English)

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**FOR USE BY QUALIFIED PERSONNEL ONLY**

## KEY FEATURES

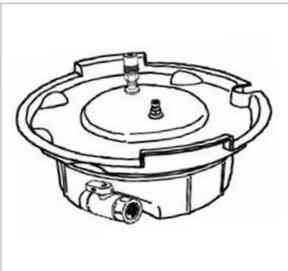
### Radiator Adapter Kit

- Detects and exposes external system leaks
- Detects internal engine leaks due to blown gaskets or cracked block
- Includes radiator cap test connectors
- Includes hand pump thermometer and 21 adapters to fit most domestic and import cars, trucks and SUVs

### VACUFILL Coolant Refill Tool

- Connects to the radiator via the adapter kit and creates a vacuum in the cooling system to easily refill your cooling system without the risk of trapped air, eliminating air pockets and reducing the risk of engine overheating

## KIT ADAPTERS AND PARTS



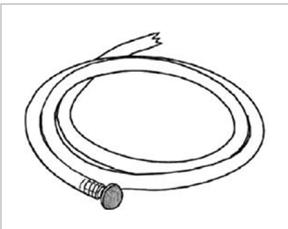
Vacuum Tank



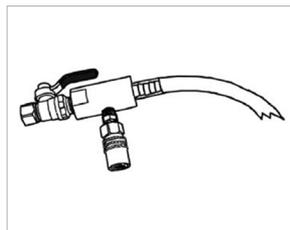
Graduated Reservoir



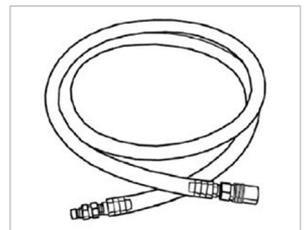
Vacuum Gauge Assembly



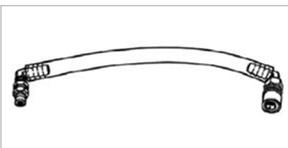
Fill Hose



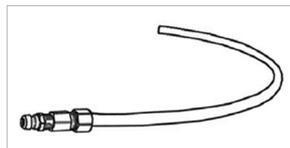
Venturi Assembly



Vacuum Hose



Extension Hose



Extraction Hose

## KIT ADAPTERS AND PARTS



- |                          |                                 |
|--------------------------|---------------------------------|
| 1. Handheld pump         | 14. Aluminum adapter #14        |
| 2. Needle thermometer    | 15. Aluminum adapter #15        |
| 3. Steel adapter #3      | 16. Aluminum adapter #16        |
| 4. Steel adapter #4      | 17. Aluminum adapter #17        |
| 5. Steel adapter #5      | 18. Aluminum adapter #18        |
| 6. Aluminum adapter #6   | 19. Aluminum adapter #19        |
| 7. Aluminum adapter #7   | 20. Aluminum adapter #20        |
| 8. Aluminum adapter #8   | 21. Aluminum adapter #21        |
| 9. Aluminum adapter #9   | 22. Aluminum adapter #22        |
| 10. Aluminum adapter #10 | 23. Aluminum adapter #23        |
| 11. Aluminum adapter #11 | 24. Radiator cap test connector |
| 12. Aluminum adapter #12 | 25. Radiator cap test connector |
| 13. Aluminum adapter #13 | 26. Adapter wrench              |

## GENERAL SAFETY INSTRUCTIONS

**WARNING:** The instructions and warnings contained in this manual should be read and understood before using or operating this tool. Do not allow anyone to use or operate this tool until they have read this manual and have developed a thorough understanding of how this tool works. Failure to observe any of the following instructions could result in severe personal injury to the user and bystanders, or cause damage to the tool and property. Keep this manual for future reference.

**NOTE:** The warnings and cautions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product but must be supplied by the operator.

**WARNING:** Use safety equipment. User and bystanders should use safety goggles or safety glasses with side shields which comply with current national standards, or when needed, a face shield. Use an ANSI approved dust mask or respirator when working around metal, wood, and chemical dusts and mists. This applies to all people in the work area. Also use non-skid safety shoes, hardhat, gloves, dust collection systems, and hearing protection when appropriate.

**WARNING:** Keep bystanders and children out of the work area while operating this tool.

**WARNING:** Always keep your work area clean, uncluttered, and well lit. Cluttered or dark areas invite accidents and injuries. DO NOT work on poor surfaces that are slippery.

**WARNING:** Do not operate this tool if you are tired or under the influence of alcohol, drugs, or medications that could affect your ability to use the tool properly.

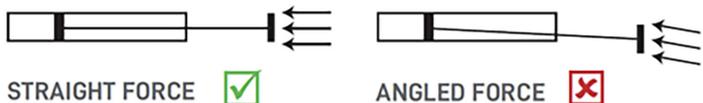
**WARNING:** Dress properly. Do not wear loose clothing or jewelry as they can be caught in moving parts. Wear restrictive hair covering to contain long hair.

**WARNING:** Do not reach over or across running machines. Keep proper footing and balance at all times. Non-skid footwear is recommended when working.

Before performing the test on your cooling system, test the pump first by pumping few times to ensure the pump is working correctly. When testing, DO NOT PUMP OVER 20 PSI.

During your inspection and during the test of your cooling system, when pumping the pump handle, always make sure that the force is applied straight into the pump rather than at an angle, or else it may cause the pump to leak. (See Figure 1)

Figure 1



## ADAPTER KIT INSTRUCTIONS

Before performing the test on your cooling system, test the pump first by pumping few times to ensure the pump is working correctly. When testing, **DO NOT PUMP OVER 20 PSI.**

### TO TEST FOR LEAKS IN COOLING SYSTEM:

1. Refer to the vehicle's service manual for any specific radiator pressure testing instructions.
2. Loosen the vehicle's radiator cap slowly to relieve any excess pressure before removing the cap completely. **NEVER OPEN THE SYSTEM WHILE HOT**, as this may cause personal injury.
3. Select the proper adapter and securely attach the adapter to the filler neck of the radiator or expansion tank.

4. Attach the quick release coupler from the hand pump to the quick joint on the system testing adapter.
5. Rapidly pump the hand pump handle using straight force as shown in figure 1 while watching the pressure gauge. Pressurize the radiator up to the optimal pressure only - **DO NOT OVER PRESSURIZE THE RADIATOR.** Ideal readings should range between 15-20 PSI (1.03-1.37 BAR).

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#### NEEDLE HOLDS STEADY

If gauge hand holds at the same pressure number for 2 minutes, there are no serious leaks in the system.

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#### NEEDLE DROPS SLOWLY

Indicates the presence of small leaks or seepage.

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#### NEEDLE DROPS QUICKLY

Indicates serious leakage is present.

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Figure 2

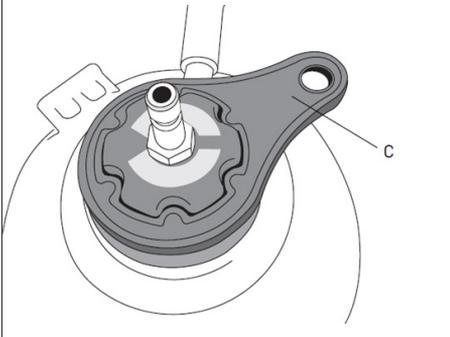
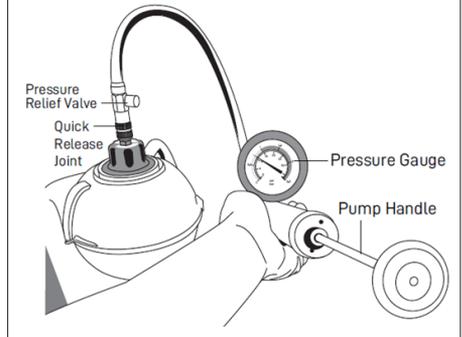


Figure 3



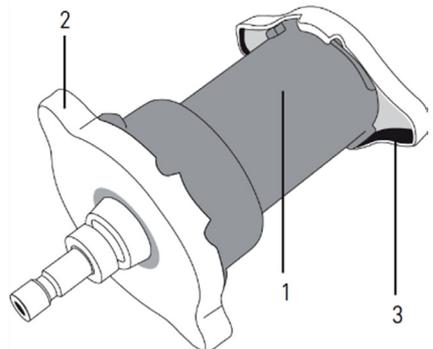
## ADAPTER KIT INSTRUCTIONS (CONTINUED)

### TO TEST FOR LEAKS IN ORIGINAL RADIATOR CAP:

1. Choose the correct radiator cap connector (24 or 25) and correct steel radiator cap (3, 4 or 5) for the correct vehicle being tested from the test kit. Fasten the vehicle's radiator cap to the radiator cap connector (24 or 25) and then fasten the steel radiator cap (3, 4 or 5) from the test kit to the other end of the radiator cap connector.
2. Remove the hand pump assembly from the test kit and fasten the quick coupler at the end of the hose to the radiator cap (3,4 or 5) securely. Operate the hand pump until reaching the pressure recommended by the vehicle manufacturer. - **DO NOT OVER PRESSURIZE.** Ideal readings should range between 15-20 PSI (1.03-1.37 BAR).
3. Check the pressure reading on the gauge immediately after reaching the vehicle manufacturer's recommended pressure. If the pressure drops, there is a leak in the radiator cap. After pressure testing is completed, press the release button on the quick coupler until the reading on the gauge reads 0. Remove quick coupler from radiator cap and then remove the original radiator cap from the original radiator cap connector.
4. Once the test is complete, release the air pressure by depressing the pressure release valve on the hand pump hose, then disconnect the quick coupler and adapter assembly.

Figure 4

1. Radiator/Expansion tank adapter cap
2. Radiator cap test connector
3. Vehicle cap to be tested



## VACUUM COOLANT REFILL INSTRUCTIONS

**WARNING:** Never remove the pressure cap from a hot system. Serious injury could result.

### SETUP AND UTILITY REQUIREMENTS:

- Minimum shop air requirement: 90 PSI
- Shop air should have an air dryer system
- Install an airline nipple to the Venturi Assembly
- Vehicle heater control should be set to the Heat position. (Ignition may need to be turned to the ON position with engine off)

### VACUUM AND REFILL:

1. Refer to the vehicle service manual for any specific radiator pressure testing instructions. Attach the appropriate adapter from the adapter kit to the vehicle's coolant fill port. Install cap adapters where required. (Fig. 5)
2. Attach the vacuum gauge assembly to the Vac N Fill cap (Fig. 6) (for some applications you may need to use the extension hose).
3. Attach the fill hose to the barb fitting on the vacuum gauge assembly (ensure that the valve is closed). (Fig. 7)
4. Pour the coolant mixture into the graduated reservoir. **IMPORTANT:** Always use more coolant than necessary. This will eliminate air from being drawn into the cooling system.
5. Place the fill hose in the graduated reservoir.
6. Install the vacuum tank on the graduated reservoir with the fill hose routed through the cut-out area in the vacuum tank. (Fig. 8)

Figure 5

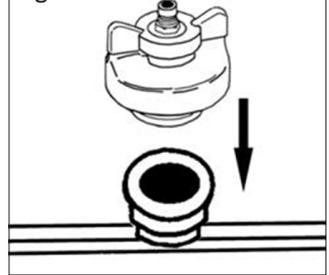


Figure 6

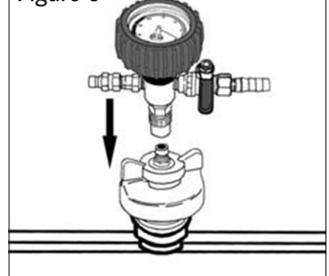


Figure 7

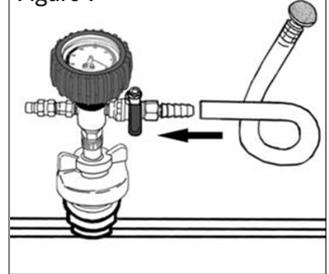
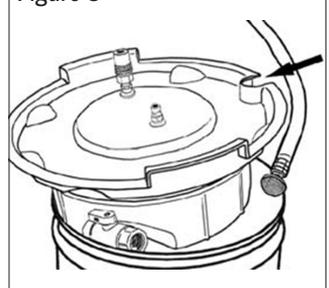


Figure 8



## VACUUM COOLANT REFILL INSTRUCTIONS (CONTINUED)

7. Attach the venturi assembly to the vacuum tank. (Fig. 9)
8. Attach a shop air hose to the venturi assembly (Ensure the valve on the venturi assembly is closed). (Fig. 10)
9. Attach the vacuum hose to the vacuum gauge assembly and the vacuum tank. (Fig. 11)
10. Open the valve on the venturi assembly. The vacuum gauge will begin to rise and a hissing noise will be present. (Fig. 12)
11. Continue to draw vacuum until the needle stops rising. This should be 610-660mm Hg (24-26 in Hg). (Fig. 13)  
*Note: cooling hoses may start to collapse. This is normal due to vacuum draw.*
12. To aid in the fill process, position the graduated reservoir above the coolant fill port.
13. Slowly open the valve on the vacuum gauge assembly. When the coolant reaches the top of the fill hose, close the valve. This will eliminate air from the fill hose. (Fig. 14)
14. Close the valve on the venturi assembly. Allow the system to stabilize under vacuum for approximately two minutes. If there is a loss of vacuum, check the cooling system for leaks.

Figure 9

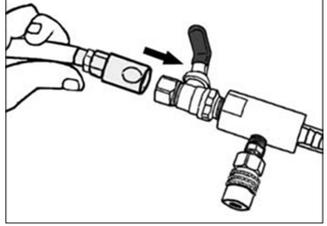


Figure 10

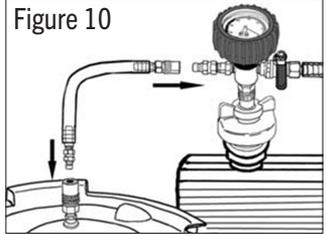


Figure 11

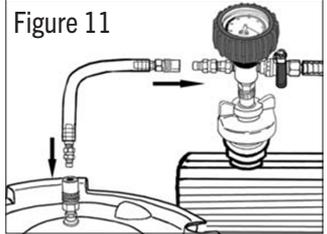


Figure 12

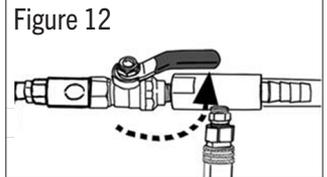
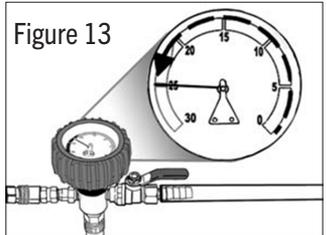
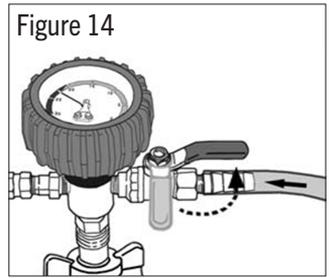


Figure 13

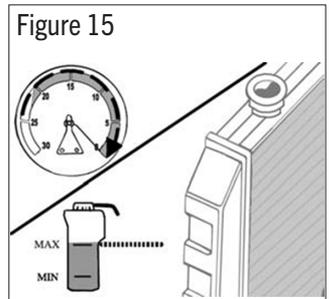


## VACUUM COOLANT REFILL INSTRUCTIONS (CONTINUED)

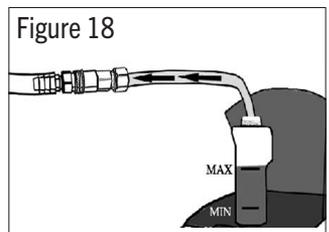
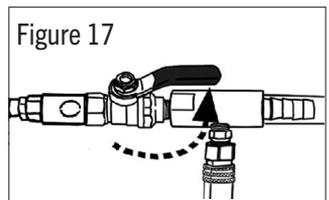
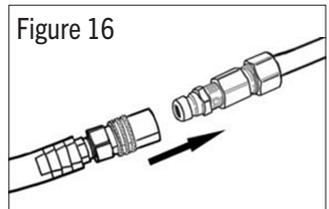
15. Open the valve on the vacuum gauge assembly. The vacuum gauge will drop as coolant is drawn into the system.
16. Once the gauge reaches zero, repeat steps 10 through 15  
*Note: Most vehicles will only require the process to be repeated twice. (Fig. 15)*



17. Detach the Vac N Fill cap from the vehicles coolant fill port. Remove cap adapters as required.
18. Add coolant to the system as necessary. After filling the cooling system, the extraction hose can be used to remove the excess coolant to achieve the proper coolant level.



19. Detach the vacuum hose from the vacuum gauge assembly.
20. Attach the extraction hose to the vacuum hose. (Fig. 16)
21. Open the valve on the venturi assembly to start a vacuum draw. (Fig. 17)
22. Use the extraction hose to draw out coolant to the proper level. (Fig. 18)
23. The vacuum tank has a lever-operated valve on the bottom. Open the valve to drain coolant from the vacuum tank into a suitable container for disposal.



## **MAINTENANCE AND STORAGE**

**Maintenance:** After testing process in Radiator Test, keep the adapter connected to the pump as you had set up while performing the actual test. Operate the pump several times to dissipate moisture and/or coolant that may have remained in the adapter and pump. Oil the hand pump to lubricate the piston and prevent corrosion and internal damage.

Store the radiator pressure tester kit in its carrying case and keep the kit in a clean, dry, safe location out of the reach of children and other unauthorized persons.

## **WARRANTY**

CPS Products, Inc. guarantees that all products are free of manufacturing and material defects to the original owner for one year from the date of purchase. If the equipment should fail during the guarantee period, it will be repaired or replaced (at our option) at no charge. This guarantee does not apply to equipment that has been altered, misused or solely in need of field service maintenance.

# VEHICLE COMPATIBILITY CHART

| Adapter  | Make/Model   |
|----------|--|
| <b>3</b> | <b>Mercedes Benz, GM (Buick), Jeep</b>   |
| <b>4</b> | <b>Buick</b> (Lesabre: 1990-, Park Avenue: 1991-), <b>Chrysler</b> (Sebring: 1995-), <b>Chevrolet</b> (Venture: 1997-), <b>Dodge</b> (Caravan: 1989-, Dakota: 1989-, Stratus: 1995-), <b>Jeep</b> , <b>Mercedes</b> (W123, W124, W126, W201), <b>Oldsmobile</b> (Silhouette: 1990-), <b>Pontiac</b> (Bonneville: 1990-, Grand Prix: 2003)  |
| <b>5</b> | <b>Acura</b> (Integra: 1991-1993, Legend: 1989-1990, NSX: 1995-2004, SLX: 1997, Vigor: 1992-1994), <b>BMW</b> (M6: 2008), <b>Chevrolet</b> (Nova: 1985-1998, Spectrum: 1985-1988, Sprint: 1986-1988), <b>Chrysler</b> (Laser: 1991-1998, Sebring: 1996-1998), <b>Dodge</b> (Avenger: 1995-1995, Colt: 1984-1991, <b>RAM</b> 50: 1989-1992, Stealth 1993-1996), <b>Eagle</b> : (Summit: 1989, Talon: 1991-1998), <b>Ford</b> : (Aspire: 1994-1997, Escort: 1991-2002, Expedition: 2009-2011, Explorer: 1995-2001, Explorer Sport Trac: 2001-2005, F150: 2009-2011, Festiva: 1989-1993, Mustang: 1997-2004, Probe: 1989-1997, Ranger: 1995-2011, Tempo: 1992-1994, Thunderbird: 1992-1995, Windstar: 1996-1999), <b>Geo</b> (Metro: 1989-1993, Prizm: 1989-1991, Spectrum: 1989, Storm: 1990-1993, Tracker: 1989), <b>GM</b> (Nova, Spectrum, Sprint), <b>Honda</b> (Accord: 1990-1993, Civic: 1988-1991, CRX: 1989-1990, Motorcycles: 1991-2004, Passport: 1994-2002, Prelude: 1990-1998), <b>Hyundai</b> (Accent: 1995-2010, Azera: 2006-2010, Elantra: 1992-2011, Entourage: 2007-2008, Excel: 1986-1994, Genesis: 2009-2011, Genesis Coupe: 2010, Sante Fe: 2002-2010, Scoupe: 1994, Sonata: 1989-2011, Tiburon: 1998-2008, Tuscon: 2005-2010, Veracruz: 2007-2010, XG 350: 2004) Infiniti: (FX35: 2003-2007, G20: 1991-2002, G35: 2004-2007, I30: 1997-2000, I35: 2002-2004, J30: 1996, M30: 1990-1992, M35: 2006-2009, M45: 2003-2010, Q45: 1990-2006, QX4: 1998-2003), <b>Isuzu</b> (Amigo: 1989-2000, Axiom: 2002-2004, i-Mark: 1985-1989, Impulse: 1985-1992), <b>Kia</b> (Amanti: 2006-2009, Borrego: 2009, Forte: 2011, Optima: 2002-2010, Rio: 2002-2011, Rio5: 2007-2011, Rondo: 2009-2010, Sedona: 2003-2011, Sephia: 1994-2001, Sorrento: 2003-2011, Soul: 2010-2011, Spectra: 2002-2009, Spectra5: 2005-2009, Sportage: 1995-2011), <b>Lexus</b> (ES300: 1996-2003, ES330: 2005, LS400: 1992, LX 450: 1996-1999, LX470: 1998-2005, SC400: 1992), <b>Lincoln</b> (Navigator: 2009-2011), <b>Mazda</b> (323: 1986-1993, 626: 1985-1999, 929: 1990-1993, B2000: 1986-1987, B2200: 1988-1993, B2300: 2005, B2500: 1998-2000, B2600: 1987-1993, B3000: 1996-2007, B4000: 1995-2006, CX-9: 2007-2010, Malia: 1991-2005, Millenia: 1995-2002, MPV: 1991-2006, MX-5 Malia: 2006-2012, MX-6: 1991-1997, Protege: 1993-2003, Protege 5: 2002-2003, RX-7: 1986-1995, RX-8: 2005-2009), <b>Mercury</b> (Capri: 1991-1994, Cougar: 1989-1992, Cougar w/6: 1993-1997, Mountaineer: 1997-2000, Topaz: 1992-1994, Tracer: 1988-1999, Villager: 1994-2002), <b>Mitsubishi</b> (3000GT: 1992-1996, Cordia: 1986-1988, Diamante: 1992-1995, Eclipse: 1990-1999, Galant: 1989-1993, Mighty Max: 1987-1994, Mirage: 1985-1992, Montero: 1989-1998, Outlander: 2003-2011, Outlander Sport: 2011, Precis: 1988-1992, Starion: 1984-1986), <b>Mercedes Benz</b> , <b>Nissan</b> (200SX: 1984-1988, 240SX: 1990-1994, 300ZX: 1984-1996, Altima: 1993-2006, Axxess: 1990, Cube: 2009-2010, D12: 1986-1994, Frontier: 1998-2011, Maxima: 1987-2008, Murano: 2003-2007, NX: 1991-1993, Pathfinder: 1987-2004, Pulsar NX: 1987-1989, Quest: 1994-2009, Rogue: 2009-2010, Sentra: 1987-2011, Stanza: 1987-1992, Versa: 2007-2011, Xterra: 2000-2012), <b>Plymouth</b> (Colt: 1984-1991, Laser: 1993-1994), <b>Subaru</b> (Baja: 2004-2005, Brat: 1983-1987, DL: 1983-1989, Forester: 1999-2011, GL: 1983-1989, GL-10: 1985-1989, Impreza: 1993-2001, Justy: 1998-1993, Legacy: 1990-2011, Loyale: 1990-1992, Outback: 2000-2011, RX: 1986, SVX: 1994-1997, XT: 1985-1991), <b>Suzuki</b> (Equator: 2009-2011, Samurai: 1986, Sidekick: 1989-1991, Swift: 1990-1994, XL-7: 2004-2006), <b>Toyota</b> (4Runner: 1986-1995, Avalon: 1995-2004, Camry: 1983-1991, Camry 4cylinder: 1994-1999, Celica: 1983-1989, Corolla: 1983-1992, Cressida: 1985-1992, Land Cruiser: 1993-2007, MR2: 1989-1995, Previa: 1991-1997, Sienna: 1998-2006, Solara: 1999-2008, Starlet: 1983-1984, Supra: 1987-1990, T100: 1995-1998, Tacoma: 1996-2004, Tercel: 1983-1990) |
| <b>6</b> | <b>Cadillac</b> (Calera: 1997-2001), <b>Chevrolet</b> (Aveo: 2004-2011, Aveo5: 2006-2011, Epica: 2004), <b>Daewoo</b> (Leganza: 1999-2002, Lanos: 1999-2002, Nubira: 1999-2002), <b>Ford</b> (Contour: 1995-2000, Fiesta: 1995-, Focus: 1998-, Fusion: 2006-), <b>GM</b> (Achieva, Skylark, Grand Am: 1992-2002), <b>Jaguar</b> (All: 1990-1994, XJ8: 1998-2001, XJR: 1998-2001, XK8: 1997-2006, XKR: 2000-2006, X-Type: 2002-2007), <b>Jeep</b> , <b>Land Rover</b> (Discovery: 1989-2004, Range Rover: 1988-1994), <b>Mercedes-Benz</b> (ML-Class: 1997-2011), <b>Mercury</b> (Mistique: 1995-2000), <b>Pontiac</b> (Le Mans: 1988-1993, G3: 2009, Wave: 2005, Wave5: 2005), <b>Porsche</b> (911: 1999-, Boxier: 1997-), <b>Saab</b> (900: 1994-1998, 9-3: 1999-2003, 9-5: 1999-2008), <b>Saturn</b> (I100: 2001-2002, L200: 2001-2003, L300: 2001-2005, L300-1: 2004, L300-2: 2004, L300-3: 2004, LS: 2000, LSI: 2000, LS2: 2000, LW1: 2000, LW2: 2000, LW200: 2001-2003, LW300: 2001-2003, Vue: 2002), <b>Suzuki</b> (Forenza: 2004-2008, Reno: 2005-2008, Swift+: 2004, Verona: 2004-2005)  |
| <b>7</b> | <b>Alfa Romeo</b> (145-930: 1994-2001, 146-930: 1994-2001, 164-164: 1987-1998, 166-936: 1998, 33-907A: 1990-1994, 33 sportwagon-907B: 1990-1994, GTV-916C: 1994, Spider-916S: 1994-2005), <b>Citroen</b> (Jumper Box 230L: 1994-2002, Jumper Bus 230P: 1994-2002, Jumper Platform/Chassis 230: 1994-2002), <b>Fiat</b> (Coupe FA/175: 1993-2000, Cromo-154: 1985-1996, Ducato Box-230L: 1994-2002, Ducato Box-244: 2002, Ducato Bus-230: 1994-2002, Ducato Bus-244Z: 2002, Ducato Platform/Chassis 230: 1994-2002), <b>Lancia</b> (Delta 11-836: 1993-1999, Kappa-938A: 1994-2001, Kappa Coupe-838: 1996-2001, Kappa SW-838B: 1996-2001, Thema-834: 1984-1994, Thema SW-834: 1987-1994), <b>Mini Cooper</b> (S: 2002-), <b>Peugeot</b> (206: 1999-, 307: 2004-, 406: 1999-, 407: 2004-, 807: 2004-, Boxer Box-230L: 1994-2002, Boxer Bus-230P: 1994-2002, Boxer platform/Chassis-ZC1: 1994-2002), <b>Renault</b> (All: 1985-1987, Avantime: 2002-, Espace: 2002-), <b>Saab</b> (900-1978-1993, 9000: 1986-1998), <b>Sterling</b> (All: 1987-1991), <b>Jeep</b> , <b>Volvo</b> (Passenger vehicles w threaded neck)   |
| <b>8</b> | <b>VW</b> (Vento, T4, Passat: 1990-1997, Beetle, Sharan, Cabrio: 1995-2002, Corrado: 1990-1994, Eurovan: 1993-2003, Golf: 1990-1999, 1990-1998: with female thread on filler neck of expansion tank - except 1998 Passat & New Beetle, Jetta: 1990-1999)   |

# VEHICLE COMPATIBILITY CHART (CONTINUED)

| Adapter | Make/Model  |
|---------|---|
| 9       | <p><b>Audi</b> (A3: 2006-2012, A3-8P1: 2003, A3 Sportback-BPA: 2004, A4: 1996-2012, A4-8EC, B7: 2004-2008, A4 Avant- B7: 2004-2008, A4 Quattro: 1996-2012, A5: 2011-2012, A5 Quattro: 2008-2012, A6: 1998-2012, A6 Quattro: 1998-2011, A7 Quattro: 2012, AB Quattro: 2004-2010, Allroad Quattro: 2001-2005, Q5: 2009-2012, Q7: 2007-2012, RB: 2008-2012, RS4: 2007-2008, RS6: 2003, S4: 2000-2012, S5: 2008-2012, S6: 2002-2011, S8: 2007-2009, TT: 2000-2009, TT-8J3: 2006, TT-8N3: 1998-2006, TT Quattro: 2000-2013, TT Roadster-8J9: 2007, TT Roadster 8N9: 1999-2006), <b>BMW</b> (345), <b>Porsche</b> (Cayenne), <b>Seat</b> (Altea-5P1: 2004, Cordoba-6K2: 1999-2002, Cordoba-6L2: 2002-2009, Ibiza II-6K1: 1999-2002, Ibiza IV-6L1: 2002-2009, Leon-1M1: 199-2006), <b>Skoda</b> (Fabia: 2006, Fabia 6Y2: 1999-2008, Fabia Combi: 2007, Fabia Combi-6Y5: 2000-2007, Fabia Praktik: 2001-2007, Fabia Saloon-6Y3: 1999-2007, Laura-1Z3: 2004, Octavia 1U2: 1996-2010, Octavia Combi-1U5: 1998-2010, Octavia Combi-1Z5: 2004, Roomster-5J: 2006, Superb Estate: 3T5: 2009), <b>VW</b> (Beatie: 1998-2012, Caddy III Box-2KA, 2KH, 2CA, 2CH: 2004, Caddy III Estate-2KB, 2KJ, 2CB, 2CJ: 2004, CC: 2009-2013, Crafter 30-35 Bus 2E: 2006, Crafter 30-50 Box 2E: 2006, Crafter 30-50 Platform/ Chassis 2F: EOS: 2007-2012, EOS-1F7, 1F8: 2006, Fox-5Z1, 5Z3: 2003, Golf: 1999-2012, Golf Plus-5M1, 5Z1: 2005, Golf V-1K1: 2003-2009, Golf V Variant 1K5: 2007, GTI: 2006-2013, Jetta: 1997-2012, Jetta I Saloon-1K2: 2005-2010, LT 28-3511, Bus-2DM: 1996-2006, LT 28-46 II Box-2DX0AE: 1996-2006, LT 28-46 II Platform/Chassis 2DX0FE: 1996-2006, Multivan Mk V-7HM, 7HN, 7EF, 7EM, 7EN: 2003, New Beetle-9C1, 1C1: 1998, New Beetle Convertible-1Y7: 2002-2010, Passat: 1998-2012, Passat-3B3: 2000-2005, Passat-3C2: 2005, Passat Variant-3B6: 2000-2005, Passat Varian 3C5: 2005, Polo-9N: 2001, Polo Saloon: 2002, R32: 2008, Rabbit: 2006-2009, Tiguan: 2009, Touareg: 2004-2012, Touran-1T1, 1T2, 1T3: 2003, Transporter/Caravelle MK V Bus-7HB, 7HJ, 7EB, 7EJ, 7EF: 2003, Transporter MK V Box-7HA, 7HH, 7EA, 7EH: 2003, Transporter MK V Platform/Chassis-7JD, 7JE, 7JL, 7JY, 7JZ: 2003)</p>   |
| 10      | <p><b>BMW</b> (3-E30: 1982-1992, 3-E36: 1990-1998, 3-E46: 1998-2005, 3-E90: 2005, 3 Compact-E36: 1994-2000, 3 Compact-E46: 2001-2005, 3 Convertible-E30: 1985-1993, 3 Convertible-E36: 1993-1999, 3 Convertible-E46: 2000, 3 Coupe-E36: 1992-1999, 3 Coupe-E-46: 1999, 3 Touring-E30: 1987-1994, 3 Touring-E36: 1995-1999, 3 Touring-E46: 1999-2005, 3 Touring-E91: 2005, 5-E28: 1980-1990, 5-E34: 1987-1995, 5-E39: 1995-2003, 5-E60: 2003, 5 Touring-E34: 1991-1997, 5 Touring-E39: 1997-2004, 7-E23: 1977-1986, 7-E32: 1986-1994, 7-E38: 1994-2001, 7 E65, E66: 2001, 8-E31: 1990-1999, X3-E83: 2004, X3-E53: 2000, Z3-E36: 1995-2003, Z3 Coupe-E36: 1997-2003, Z4-E85: 2003, Z4 Coupe-E86: 2006, Z8-E53: 2000-2003, Brilliance 3 Series-E46: 2003-2005, Brilliance 3 Series-E90: 2004), <b>Land Rover</b> (Freelander-LN: 1998, Range Rover I11-LM: 2002)</p>   |
| 11      | <p><b>Audi</b> (1975-1993: w/ male thread on expansion tank), <b>VW</b> (1975-1993: w/ male thread on expansion tank, Golf: 1983-1992, Cabriolet: 1985-1993, Dasher: 1980-1981, Fox: 1987-1993, Golf: 1985-1990, Jetta: 1980-1990, Quantum: 1980-1988, Rabbit: 1975, Rabbit Convertible: 1980-1984, Scirocco: 1975-1988)</p>  |
| 12      | <p><b>Caterham</b> (Super Seven 1990-1999), <b>Ford</b> (Cougar 1998-2001, Mondeo 1996-2007, Mondeo Estate Wagon: 1996- 2007, Transit 260: 2000-2006, Transit 280: 2000-2006, Transit 300: 2000-2006, Transit 330: 2000-2006, Transit 350: 2000-2006, Transit 425: 2003-2006, Transit 430: 2001-2006, Transit Tourneo: 2000-2006, Courier III: 1990-1995, Courier IV: 1995-2001, Escort 55 IV: 1986-1990, Escort 55 VI: 1994-2000, Escort 75 VI: 1994-2000, Escort IV: 1986- 1990, Escort V: 1990-1996, Escort VI: 1995-2000, Fiesta Classic: 1987-1989, Fiesta II: 1989-1989, Fiesta III: 1989-1996, Fiesta IV: 1995-1999, Fiesta V: 1999-2002, Fiesta Van 11: 1987-1989, Fiesta Van 111: 1989-1996, Fiesta Van 1V: 1995- 2002, Fiesta Van V: 1999-2002, Fiesta Van VI: 2002-2008, Fiesta VI: 2002-2008, Focus 1: 1998-2005, Focus Wagon 1: 1998-2005, Fusion: 2002-2005, Granada Scorpio: 1985-1994, Ka 1: 1996-2005, Mondeo 1: 1993-1996, Mondeo 11: 1996-1998, Mondeo Wagon 1: 1993-1996, Mondeo Wagon 11: 1996-2000, Orion 11: 1986-1990, Orion 111: 1990- 1993, P100 Sierra: 1989-1994, Puma 1: 1997-2002, Scorpio 1: 1984-1994, Scorpio 11: 1994-1998, Sierra Cosworth 11: 1987-1993, Sierra 1: 1984-1987, Sierra 11: 1987-1993, Sierra Sapphire 11: 1987-1993, Streetta 1: 2003-2005, Transit 100: 1994-1999, Transit 120: 1994-1999, Transit 150: 1997-1999, Transit 190: 1994-1999, Transit Connect: 2002- ), <b>Land Rover</b>, <b>Mazda</b> (2: 2002-2007, i21: 1996-2002), <b>Opel</b> (Agila: 2000-2008, Ascona B: 1978-1981, Ascona C: 1981- 1988, Astra Cabrio F: 1993-2001, Astra Cabrio G: 2001-2005, Astra Classic F: 1998-2002, Astra Coupe G: 1999-2005, Astra F: 1991-1998, Astra G: 1998-2005, Astra H: 2004-2005, Astra Van F: 1991-1998, Astra Van G: 1998-2004, Calibra: 1989-1998, Combo Corsa B: 1992-2001, Combo Corsa C: 2001-2004, Corsa A: 1982-1993, Corsa B: 1993-2000, Corsa C: 2000-2006, Corsa Van A: 1982-1994, Corsa Van B: 1994-2001, Corsa Van C: 2000-2003, Frontera A: 1991-1998, Kadett 0: 1979-1984, Kadett E: 1984-1992, Kadett Van E: 1984-1992, Manta A: 1974-1975, Manta B: 1975-1988, Meriva: 2003-2005, Monza: 1981-1987, Omega A: 1986-1994, Omega B: 1994-2003, Senator A: 1981-1987, Senator B: 1987-1993, Tigra A: 1994-2001, Tigra B: 2004, Vectra A: 1988-1995, Vectra B: 1995-2003, Zafira A: 1999-2005, Zafira Van: 2002-2003), <b>Saab</b> (900 11: 1993-1998), <b>Skoda</b> (Favorit: 1989-1995, Favorit Forman: 1993-1995, Felicia - 6U1: 1994-2000), <b>Ssangyong</b>, <b>Vauxhall</b> (Astra Cabrio 111: 1991-2001, Astra Cabrio 1V: 2001-2007, Astra Coupe 1V: 1999-2005, Astra 1: 1979-1984, Astra 11: 1984-1991, Astra 111: 1991-1998, Astra 1V: 1998-2005, Astra Van 111: 1991-1996, Astra Van 1V: 1998-2005, Astramax: 1985-1991, Astravan 1 1982-1984, Astravan 11 1984-1991, Belmont: 1986-1991, Calibra: 1990-1998, Carlton: 1983-1994, Cavalier 11: 1981-1988, Cavalier 111: 1988-1995, Combo: 1993- 2004, Combo Crew Van: 2001-2006, Corsa 1: 1993-2000, Corsa 11: 2000-2006, Corsa Van 1: 1993-2001, Corsa Van 11: 2001-2006, Frontera A: 1991-1998, Meriva: 1982-1993, Nova: 1982-1993, Nova Van: 1990-1993, Omega: 1994-2003, Senator: 1987-1993, Tigra: 1994-2004, Vectra 1: 1999-2005, Zafira A: 1999-2005, Zafira B: 2005-2007)</p> |

## VEHICLE COMPATIBILITY CHART (CONTINUED)

| Adapter   | Make/Model   |
|-----------|--|
| <b>13</b> | <b>Chrysler</b> (Crossfire: 2004-), <b>Mercedes</b> (w/ thread filler neck on expansion tank, except M-Class, 300SE:1992-1993, 400SE:1992, 400SEL:1993, 500SEC:1993, 500SEL:1992-1993, 500SL:1900-1993, 600SEC:1993, 600SEL: 1992- 1993, 600SL:1993, C230: 2002,C240: 2001-2005, C280:1994-2007, C300: 2008-2009, C32AMG: 2002-2004, C320: 2001: 2005, C350: 2008, C36 AMG: 1995-1997, C43 AMG: 1998-2000, CL500: 1998-2006, CL55 AMG: 2001-2002, CL600:1998-2006, CL65 AMG: 2005-2006, CLK 320:1998-2005, CLK 430: 1999-2003, CLK500: 2003-2005, CLK55 AMG: 2001-2005, E300:1996-1997, E320:1996-2005, E350: 2006-2009, E420:1997, E430:1998-2002, E500: 2003-2006, E55 AMG: 1999-2002, E550: 2009, G500: 2002-2005,G55 AMG: 2003-2005, GL450: 2007-2008, ML350: 2006-2008, ML500: 2006-2007,ML550: 2008-2009, S320: 1994-1999, S350: 1994-2006, S420: 1994-1999, S500: 1994-2006, S55 AMG: 2001-2006,S600: 1994-2006, S65 AMG: 2006, SL320:1994-1997, SL500: 1994-1998, SL600: 1994-2002, SLK280: 2006-2008, SLK32 AMG: 2002-2004, SLK 320: 2001-2004, SLK 350: 2006-2008, SLK55 AMG: 2008)  |
| <b>14</b> | <b>Ford</b> (Mondeo: 2000-2007,Focus: 2000-2005, C-MAX03,Contour:1995-2000), <b>Mercury</b> (Cougar: 1999, Mystique: 1995-1999)  |
| <b>15</b> | <b>Ford International</b> (C-Max: 2007-2012, C-Max 11: 2010, Fiesta V JH, JO: 2001,Fiesta Van: 2009, Fiesta V1: 2009, Fiesta V1: 2008,Focus C-Max: 2003-2007,Focus 11 OA: 2004,Focus 11 Convertible: 2006,Focus 11 Estate OAW: 2004,Focus Saloon OA: 2005, Focus 11 Station Wagon OAW: 2004, Focus 111: 2011, Focus 111 Saloon: 2011,Focus 111 Turnier: 2011,Galaxy: 2006,Grand C-Max: 2010, Kuga: 2008, Mondeo 1V: 2007,Mondeo 1V Saloon: 2007, Mondeo 1V Turnier: 2007, Rager: 2011, S-Max: 2006, Transit Bus: 2006, Transit Flatbed Chassis: 2006,Transit Tourneo: 2006), <b>Ford</b> Asia & Oceania (Fiesta: 2002-2013,Focus: 2004-2011,Focus Estate Wagon: 2011, Mondeo: 2007,Ranger: 2011), <b>Ford</b> Europe (B-Max: 2012, C-Max: 2007-2012, Fiesta: 2001-2013, Fiesta Van: 2008-2010, Focus: 2004-2013, Focus GC: 2006-2011, Focus C-Max: 2003-2007,Focus Estate Wagon: 2004-2013,Focus Van: 2005-2013,Galaxy: 2006-2011,Galaxy Van: 2006-2010, Grand C-Max: 2010-2012, Kuga: 2008-2012, Mondeo: 2007-2012, Mondeo Estate Wagon: 2007-2011, S-Max: 2006-2011,Transit 250: 2011,Transit 260: 2006,Transit 280: 2006,Transit 300: 2006,Transit 330: 2006- 2013, Transit 350: 2006-2013, Transit 370: 2006,Transit 410: 2006, Transit 430: 2006-2013, Transit 460: 2006, Transit Custom 250: 2012,Transit Custom 270: 2012,Transit Custom 290: 2012,Transit Custom 300: 2012,Transit Custom 310: 2012, Transit Custom 330: 2012, Transit Tourneo: 2012, Transit Tourneo Custom: 2012), <b>Ford</b> USA (Ranger: 2011), <b>Ford</b> Australia (Fiesta WS: 2008,Fiesta Hatchback WT: 2010,Fiesta Saloon WT: 2010,Focus Hatchback LT: 2005,Focus Hatchback LV: 2009-2011, Focus Hatchback LT: 2005, Focus Saloon LS, LT: 2005, Focus Saloon LV: 2009-2011, Mondeo Hatchback MA, MB: 2007), <b>Land Rover</b> (Freelander 2 FA: 2006, Range Rover Evoque: 2011,Freelander: 2006-2013,LR2: 2006), <b>Mazda</b> (2: 2007, 3: 2003-2013, 5: 2010, 2 OE: 2007, 3 BK: 2003, 3 BL: 2009, 3 Saloon BK: 2000-2009, 3 Saloon BL: 2009, 5 CW: 2010,Axela: 2003, BT50: 2011), <b>Volvo</b> (C30: 2006-2012, C70: 2005-201, C70 11 Convertible: 2006, S40: 2004-2010, S40 11 MS 2004, S60: 2010-2013, S60 11: 2010, S80: 2006-201, S80 11 AS: 2006, V40: 2012, V40 Cross Country: 2012,V40 Hatchback: 2012, V50: 2003-2012,V50 NW: 2004,V60: 2010-2013,V70: 2007-2012,V70 III Estate: 2007, XC60: 2008, XC70: 20 7-2012, XC70 Cross Country: 2007-2011, XC70 11: 2007) |
| <b>16</b> | <b>Mercedes</b> (A140:19 7-2004,A150: 2004-2012,A160: 1997-2012,A170:1998-2012, A180: 220004-2012,A190: 1999-2004, A200:2004-2012,A21 AMG: 2002-2004, A210: 2002-2004,B150: 2009-2011, B160: 2009-2011, B170: 2005-2011, B180: 200-2011, B200:2005-2011,Vaneo: 2001-2005, Vaneo 1.6: 2002, Vaneo 1.7: 2002, Vaneo 1.9: 2002, W168:1997-2004)   |
| <b>17</b> | <b>BMW</b> (X5: 2000-2011, X5 M: 2009-2012, X5 xDrive 30i: 2008-2010, X5 xDrive 48i, X5 xDrive 50i: 2010-2012, X6: 2008-2012,ActiveHybrid X6: 2010, X6 M: 2009, X6 xDrive 35i: 2008-2013, X6 xDrive 50i: 2008,Z3: 1996-2002, Z4: 2003-2008, Z8:2000-2003)  |
| <b>18</b> | <b>Ford</b> (Galaxy Van: 1995-2006), <b>SEAT</b> (Alhambra Van: 1996-2010), <b>VW</b> (Sharan Van: 1996-2010)  |
| <b>19</b> | <b>Lexus</b> (GS460: 2008-2011, HS 250h: 2010, IS F: 2008-2013, LS460: 2007-2013, LS 600h: 2008-2012), <b>Scion</b> (iC: 2011-2012, xB: 2008-2012), <b>Toyota</b> (Celica: 2000-2005, MR2 Spyder: 2000-2005, Prius: 2010-2011, RAV4: 2006-2012)  |
| <b>20</b> | <b>Saab</b> (EcoPower 9-3,9-5)   |

# VEHICLE COMPATIBILITY CHART (CONTINUED)

| Adapter | Make/Model  |
|---------|---|
| 21      | <p><b>Buick</b> (Lacrosse: 2005, Rainier: 2005-2007), <b>Cadillac</b> (CTS: 2006, Escalade: 2004-2007, SRX: 2004-2007, STS: 2005-2006, BLS: 2007), <b>Chevrolet</b> (Avalanche 1500: 2002-2006, Avalanche: 2007, Cavalier: 1999-2005, Classic: 2004, Cobalt: 2007, Colorado: 2004-2007, Equinox: 2005-2007, Express 1500: 2004-2007, Express 2500: 2003-2007, Express 3500: 2003-2007, HHR: 2007, Malibu: 2001-2007, Silverado 1500: 1999-2007, Silverado 1500 HO: 2002-2007, Silverado 2500: 1999-2004, Silverado 2500 HO: 2001-2007, Silverado 3500: 2001-2007, Silverado 3500 HO: 2007, SSR: 2006, Suburban 1500: 2001-2007, Suburban 2500: 2001-2007, Tahoe: 2000-2007, Trailblazer: 2004-2007, Viva: 2003-2008), <b>Fiat</b> (Croma: 2005-2013), <b>Ford</b> (Crown Victoria: 1993-2011, E-150: 2003-2012, E-150 Club Wagon: 2003-2005, E-150 Econoline: 1992-2002, E-150 Econoline Club Wagon: 1992-2012, E-250 Econoline: 1992-2002, E-250 Super Outy: 2004-2005, E-350: 2003, E-350 Club Wagon: 2003-2005, E-350 Econoline: 1992-2002, E-350 Econoline Club Wagon: 1992-2002, E-350 Super Outy: 2004-2012, Edge: 2007-2012, Excursion: 2000-2005, Expedition: 1997-2008, Explorer: 2002-2012, F-150: 1997-2012, F-250 Super Outy: 1999-2012, F-350 Super Outy: 2005-2012, F-450 Super Outy: 2005-2012, F-550 Super Outy: 2005-2012, Five Hundred: 2005-2007, Flex: 2009-2012, Freestar: 2004-2007, Fusion: 2006-2012, Mustang: 1996-2012, Ranger: 1998-2011, Taurus: 1996-2012, Thunderbird: 2002-2005, Windstar: 1999-2003), <b>GMC</b> (Canyon: 2004-2007, Envoy: 2003-2007, K2500 Suburban: 1999, Savana 1500: 2003-2007, Savana 2500: 2000-2007, Trailblazer 3500: 2004-2007, Sierra 1500: 1999-2007, Sierra 1500 HO: 2001-2007, Sierra 2500: 1999-2004, Sierra 2500 HO: 2001-2007, Sierra 3500: 2001-2007, Sierra 3500 HO: 2007, Sierra C3: 2001, Yukon: 2000-2006, Yukon XL 1500: 2000-2007, Yukon XL 2500: 2001-2007), Hummer (H2: 2004-2006, H3: 2006), <b>Isuzu</b> (Ascender: 2003-2006, i-280: 2006, i-290: 2007), <b>Lincoln</b> (Continental: 1995-2002, Mark V111: 1993-1998, MKS: 2009-2012, MKT: 2010-2012, MKX: 2007-2012, MKZ: 2007-2012, Town Car: 1993-2011, Zephyr: 2006), <b>Mazda</b> (Mazda 6: 2006), <b>Mercury</b> (Cougar: 1993-1997, Grand Marquis: 1993-2011, Milan: 2006-2011, Monterey: 2004-2007, Sable: 1996-2009), <b>Oldsmobile</b> (Alero: 1999-2004, Cutlass: 1999, Intrigue: 2002), <b>Opel</b> (Astra: 2004-2013, Astra Cabrio: 2003-2006, Astra Classic: 2006-2009, Astra Coupe: 2003-2005, Astra GTC: 2005-2011, Astra H: 2004-2010, Astra Van: 2004-2010, Corsa: 2006-2013, Corsa O: 2007-2011, Corsa Van: 2006-2010, Meriva: 2006-2010, Signum: 2003-2008, Vectra: 2002-2008, Zafira: 2005, Zafira B: 2005-2011, Zafira Van: 2005), <b>Pontiac</b> (G5: 2007, G6: 2006, Grand Am: 199-2005, Grand Prix: 2005-2006, Pursuit: 2005-2006, Solstice: 2006-2007, Sunfire: 2005), <b>Saab</b> (9-3: 2003-2012, 9-3 Sport: 2002-2012, 9-3 X: 2009-2012, 9-7 X: 2007), <b>Saturn</b> (Aura: 2007, Ion 1: 2003-2005, Ion 2: 2003-2007, Ion 3: 2003-2007, Outlook: 2007, Sky: 2007, Vue: 2005-2007), <b>Suzuki</b> (XL-7: 2007), <b>Vauxhall</b> (Astra: 2002-2011, Astra Cabrio: 2006-2011, Astra Coupe: 2005-2008, Astra GTC: 2004-2011, Combo: 2005-2011, Corsa: 2006-2012, Meriva: 2006-2010, Signum: 2003-2008, Vectra: 2002-2008, Zafira: 2005-2013)</p> |
| 22      | <p><b>BMW</b> (550i 2010-2012, 550i Gran Turismo: 2012, 550i GT: 2010-2012, 550i GT xDrive: 2011-2012, 550i xDrive Gran Turismo: 2012, 550i X: 2011-2012, 550i XGT: 2010-2012, 650i: 2012, 650i Cabrio: 2012, 650i Convertible: 2011-2012, 650i Coupe: 2011-2012, 650i: Gran Coupe: 2012, 650i xDrive Gran Coupe: 2012, 650iX Convertible: 2012, 650i X Coupe: 2012, 750i: 2009-2012, 750i Active Hybrid: 2011, 750i xDrive: 2010-2011, 750i X: 2010, 750Li: 2009-2012, 750 Li Active Hybrid: 2011, 750 LiX: 2010, 760i: 2010-2012, 760Li: 2010-2012, Alpi a B7: 2010-2012, Alpina B7 xDrive: 2011-2012, Alpina B7L: 2010-2012, Alpina B7L xDrive: 2011-2012, Alpina B7LX: 2011-2012, Alpina B7X: 2011-2012, Hybrid 5: 2012, M5: 2012, M6 Convertible: 2012, X5: 2004-2012, X5 50iX: 2011, X5 M: 2009-2010, X5 xDrive 48i: 2008-2010, X5 xDrive 50i: 2010, X6: 2008-2012, X6 50iX: 2008-2010, X6 Active Hybrid: 2010, X6 Hybrid: 2010-2011, X6 M: 2009-2010, X6 xDrive 50i: 2008), <b>Land Rover</b> (Range Rover: 2003-2005), <b>Mini</b> (<b>Cooper</b>: 2008-2012, <b>Cooper</b> Clubman: 2008-2012, <b>Cooper</b> Countryman: 2011-2012, <b>Cooper</b> Convertible: 2009-2012, <b>Cooper</b> S Clubman: 2008-2012, <b>Cooper</b> S Convertible: 2009-2012, <b>Cooper</b> SX: 2011-2012, <b>Cooper</b> Works: 2007-2012, <b>Cooper</b> Works Clubman: 2008-2012, <b>Cooper</b> Works Convertible: 2009-2012, <b>Cooper</b> S: 2007-2012, <b>Mini</b> Clubman: 2007-2013, <b>Mini</b> Clubvan: 2010-2012, <b>Mini Cooper</b>: 2006-2013, <b>Mini</b> Countryman: 2010-2013, <b>Mini</b> Coupe: 2011, <b>Mini</b> One: 2009-2010, <b>Mini</b> Roadster: 2012)</p>  |
| 23      | <p><b>Ford</b> (Late Model), <b>GM</b> (Late Model)</p>   |

## LOCATIONS

### **CPS PRODUCTS, INC. U.S.A.**

1010 East 31st Street  
Hialeah, Florida 33013, USA  
Tel: 305-687-4121, 1-800-277-3808  
Fax: 305-687-3743  
E-mail: [automotive@cpsproducts.com](mailto:automotive@cpsproducts.com)  
Website: [www.cpsproducts.com](http://www.cpsproducts.com)

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Mississauga, ON, L4Y 1M5  
Tel: 905.615.8620  
Fax: 905.615.9745  
E-mail: [info@cpsproducts.com](mailto:info@cpsproducts.com)  
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Zwijndrecht, Belgium  
Tel:(323) 281 30 40,  
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### **CPS AUSTRALIA PTY. LTD.**

109 Welland Avenue  
Welland, South Australia 5007  
Tel: +61 8 8340 7055,  
E-mail: [sales@cpsaustralia.com.au](mailto:sales@cpsaustralia.com.au)



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