Installation Instructions

Bendix® GSAT® (Global Scalable Air Treatment) Core Module Replacement Kits for Volvo® Trucks

KIT COMPONENTS

See Figure 1. The following components are in the Bendix® GSAT® (Global Scalable Air Treatment) core module kits for Volvo® trucks:

Item No.	Component	Quantity
1	Core Module 2X EPB for Attached Air Dryer Variant	1
2	Seal	1
Bendix Volvo Kit Part Number: K202682K57 Volvo Kit Part Number: 24865982 Bendix Mack® Kit Part Number: K202683K57 Mack Kit Part Number: 24865984		

Item No.	Component	Quantity
3	Core Module 2X EPB for Detached Air Dryer Variant	1
Bendix Volvo Kit Part Number: K273506SC Bendix Mack Kit Part Number: K273508SC		

Item No.	Component	Quantity
4	Core Module 2X EPB CFL for Detached Air Dryer Variant	1
Bendix Volvo Kit Part Number: K273509SC Bendix Mack Kit Part Number: K273510SC		

Item No.	Component	Quantity
5	Core Module 1X EPB for Attached Air Dryer Variant	1
6	Seal	1
Bendix Volvo Kit Part Number: K202680K57 Volvo Kit Part Number: 24865981 Bendix Mack Kit Part Number: K202681K57 Mack Kit Part Number: 24865983		

Item No.	Component	Quantity
7	Core Module 1X EPB for Detached Air Dryer Variant	1
Bendix Volvo Kit Part Number: K273511SC Bendix Mack Kit Part Number: K273512SC		

GENERAL SAFETY GUIDELINES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following guidelines should be observed AT ALL TIMES:

- ▲Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.
- ▲Stop the engine and remove the ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically-charged components.
- ▲Do not attempt to install, remove, disassemble or assemble a component until you have read, and thoroughly understand, the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
- ▲If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system, a Bendix® DRM™ dryer reservoir module, a Bendix® AD-9si®, AD-HF®, or AD-HFi® air dryer, be sure to drain the purge reservoir.
- ▲Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
- ▲Never exceed manufacturer's recommended pressures.
- ▲Never connect or disconnect a hose or line containing pressure; it may whip and/or cause hazardous airborne dust and dirt particles. Wear eye protection. Slowly open connections with care, and verify that no pressure is present. Never remove a component or plug unless you are certain all system pressure has been depleted.
- ▲Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, wiring, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
- ▲Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.
- ▲Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
- ▲For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.
- ▲The power MUST be temporarily disconnected from the radar sensor whenever any tests USING A DYNAMOMETER are conducted on a vehicle equipped with a Bendix® Wingman® system.
- ▲You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.

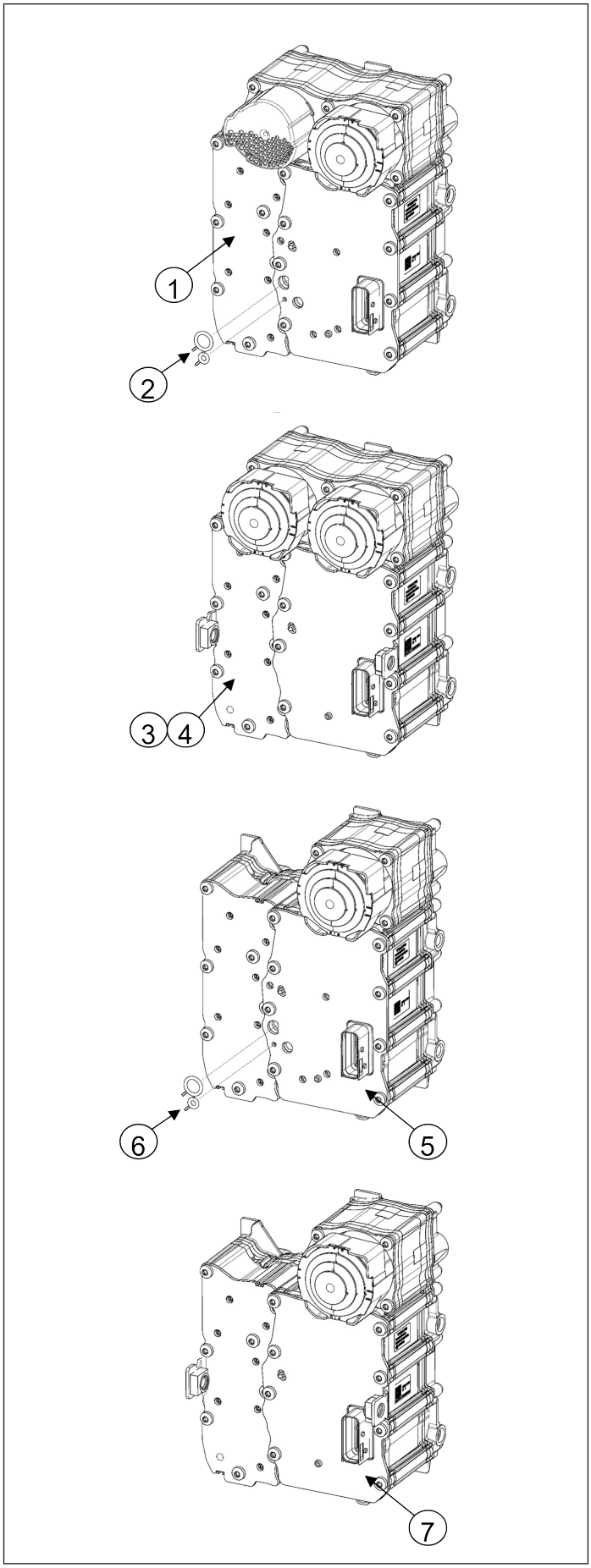

Figure 1 – Core Module Kits

DESCRIPTION

IMPORTANT

Do not install the core module included in this kit if it does not match the one being removed.

These kits are used to replace the Bendix® GSAT® (Global Scalable Air Treatment) core module. **These are not retrofit kits.** These kits *cannot* be installed on vehicles that do not have an existing GSAT system. As shown in *Figure 1*, there are several variants of the GSAT air dryer. **Be sure to verify the core module included in this kit is identical to the core module you are replacing.** Ensure both core modules have the same port and mounting configurations in the same locations.

CAUTION

When replacing the core module assembly, it is mandatory that the air dryer cartridge and carbon filter be replaced. For replacement kit part numbers and instructions, *refer to S-1693, Bendix® GSAT® (Global Scalable Air Treatment) Air Dryer Cartridge and Carbon Filter Kits for Volvo® Trucks,* on B2Bendix.com.

NOTE: When replacing the air dryer cartridge, the cartridge lifetime wear and wetness content will need to be reset. Use Bendix® ACom® Diagnostic Software, or a Volvo® diagnostic tool, to initiate the cartridge reset routines.

VEHICLE PREPARATION

1. Park the vehicle on a level surface and chock the wheels.
2. Turn the ignition switch OFF.
3. Drain all reservoirs to 0 psi (0 kpa).
4. Clean the exterior of the air dryer body to remove any dirt and debris.

WARNING

Always depressurize all air dryers and air reservoirs on the vehicle to 0 psi (0 kpa) before servicing the air dryer. Failure to drain the air pressure from all air dryers and air reservoirs may result in injury and/or death.

Air Connection Port ID	Function/ Connection	Port Size ISO 4039-2	Maximum Torque
11 IN	Energy Inlet Compressor	M22x1.5	44 ft-lb (60 N•m)
12 IN	Energy Inlet External Air Fill	M22x1.5	44 ft-lb (60 N•m)
2.1 DEL	Energy Outlet to Detached Core Module	M22x1.5	44 ft-lb (60 N•m)
4.5 CON	Control Line to Detached Core Module	M12x1.5	22 ft-lb (30 N•m)
3 EXH	Exhaust	n/a	n/a
13	Supply from Detached Dryer*	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
14	Supply from Secondary Dryer (CFL)	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
21	Energy Outlet Service Brake Front Axle	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
22	Energy Outlet Service Brake Rear Axle	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
23	Energy Outlet Clutch and Gearbox Switching	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
25	Energy Outlet Suspension	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
26	Tractor Spring Brakes	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
28.1	Tractor Spring Brakes	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
28.2	Tractor Spring Brakes	M22x1.5	29.5 ± 5 ft-lb (40 ± 7 N•m)
29.3	Trailer Supply	M22x1.5	18 ± 3 ft-lb (25 ± 5 N•m)
4.3	Port for External Release EPB Tractor	M16x1.5	18 ± 3 ft-lb (25 ± 5 N•m)
4.4	Port for External Release EPB Trailer	M16x1.5	18 ± 3 ft-lb (25 ± 5 N•m)
4.6	Control Line Detached Air Dryer	M16x1.5	18 ± 3 ft-lb (25 ± 5 N•m)
4.7	Control Line to Secondary Dryer (CFL)	M16x1.5	18 ± 3 ft-lb (25 ± 5 N•m)
4/29	Compressor Control Line	M16x1.5	18 ± 3 ft-lb (25 ± 5 N•m)
*Can be used as a tire filler			

Table 1 – Air Connections

DISASSEMBLY

Core Module (Attached Variant)

NOTE: Identify and mark all connections on the core module for ease of installation.

1. Disconnect all air line connections from the core module and air dryer.
2. Disconnect the electrical connector from the core module.
3. Remove and retain the five (5) M12 mounting bolts that secure the air dryer and attached core module to the vehicle.
4. To remove the air dryer from the core module, first remove the air dryer cartridge to access the mounting bolts from the air dryer to the core module.
5. Using an appropriate filter wrench, loosen the old air dryer cartridge and remove it from the air dryer housing by turning in a counter-clockwise direction. Be careful not to allow dirt or other contaminants to fall into the air dryer housing.

NOTE: If using a filter wrench, place the filter wrench on areas *A or B* as shown in *Figure 2* to avoid damage to the cartridge. If a filter wrench is used in the middle of the cartridge, damage may occur.

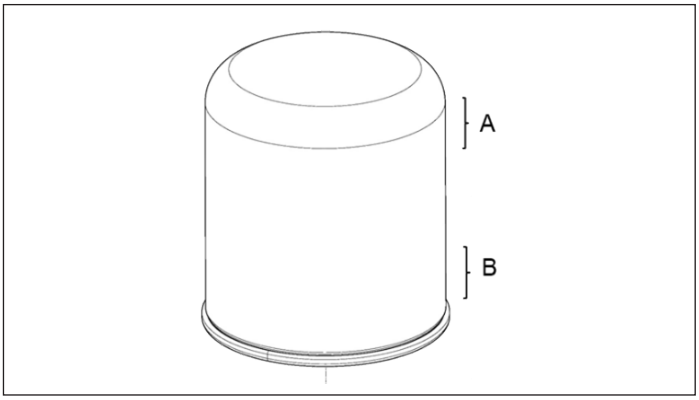

Figure 2 – Desiccant Cartridge Filter Wrench Placement

6. Once accessible, remove the carbon filter from the air dryer body and discard.
7. Using a T-30 Torx® drive, remove the four (4) M6 mounting bolts that secure the air dryer to the core module and set them aside for reuse.

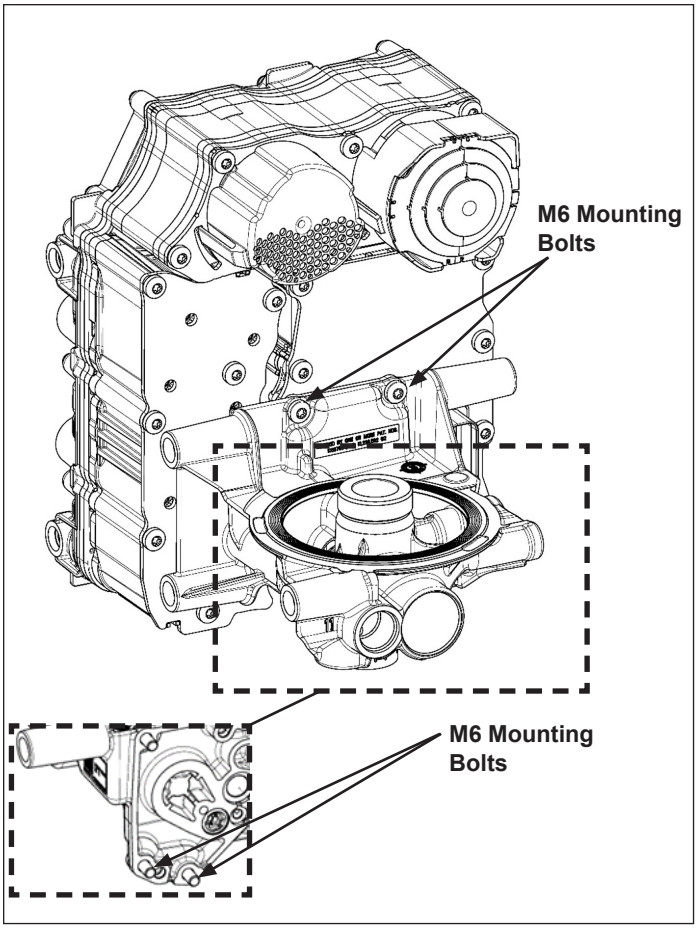

Figure 3 – M6 Mounting Bolts

8. The air dryer can now be removed by pulling it away from the core module, taking care to not damage the alignment pins and the heater connection. Discard the existing seal (a new seal is provided in this kit). *See Figure 4.*
9. Clean both mounting surfaces on the air dryer (between the air dryer and the cartridge and between the air dryer and the core module) with a clean cloth as the air dryer will be reused.

Core Module (Detached Variant)

NOTE: Identify and mark all connections on the core module for ease of installation.

1. Disconnect all air line connections from the core module.
2. Disconnect the electrical connector from the core module.
3. Remove and retain the three (3) M12 mounting bolts that secure the core module to the vehicle.
4. Remove the core module.

ASSEMBLY

Core Module (Attached Variant)

1. Before mounting the air dryer to the core module, install the seal (included in kit) into the seal groove of the air dryer mounting surface. Ensure the orientation tabs are located in the correct slots, and fully seat the seal into the groove.

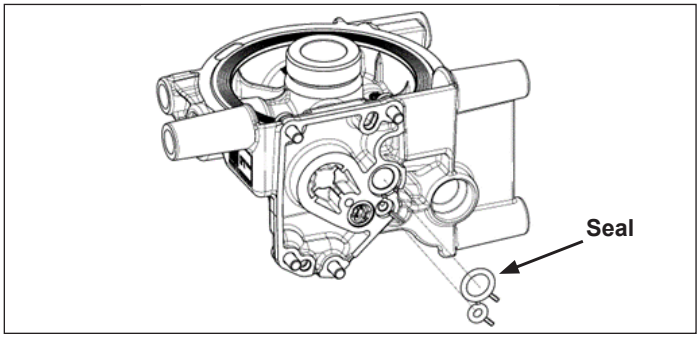

Figure 4 – Seal Installation

2. Align the air dryer mounting alignment holes with the alignment pins on the core module. Take care not to damage the exposed heater connection pins.
3. Seat the air dryer to the core module. The heater pins of the core module will engage with the air dyer heater so long as the alignment pin features are used.
4. Secure the air dryer to the core module with the four (4) M6 screws set aside during disassembly.
5. Using a T-30 Torx® drive, torque the air dryer to the control module mounting screws to 71 in-lbs (8 N•m) in a cross pattern.
6. Install the new air dryer cartridge and carbon filter per the installation instruction *S-1693, Bendix® GSAT® (Global Scalable Air Treatment) Air Dryer Cartridge and Carbon Filter Kits for Volvo® Trucks,* which is shipped with the replacement kit and can be found on B2Bendix.com.

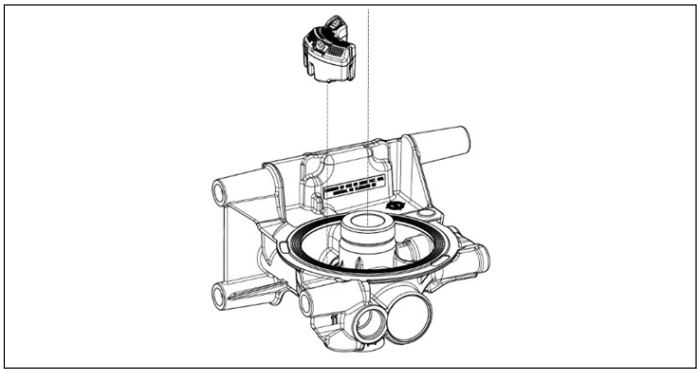

Figure 5 – Carbon Filter Installation

7. Spin the air dryer cartridge onto the air dryer housing in a clockwise direction until the seal makes contact with the air dryer housing. Using an appropriate filter wrench – if necessary – tighten the air dryer cartridge by ½ turn.

NOTE: Place the filter wrench only on areas A or B as shown in *Figure 2* to avoid damage to the cartridge.

8. Secure the core module to the vehicle using the five (5) original M12 mounting bolts that were removed during disassembly. Torque to 55 ft-lbs (75 N•m).
9. Connect all air line connections to the new core module as marked during the disassembly process.
10. Reattach the electrical harness to the core module connector interface; lock it into place with the integrated tab.
11. Before placing the vehicle back into service, perform the *Required Programming* and *Operational Test.*

Core Module (Detached Variant)

1. Secure the core module to the vehicle using the three (3) M12 mounting bolts that were removed during disassembly. Torque to 55 ft-lbs (75 N•m).
2. Connect all air line connections to the new core module as marked during the disassembly process.
3. Reattach the electrical harness to the core module connector interface; lock it into place with the integrated tab.
4. Before placing the vehicle back into service, perform the *Required Programming* and *Operational Test.*

REQUIRED PROGRAMMING

Before placing the vehicle in service, the Bendix® GSAT (Global Scalable Air Treatment) system for Volvo® must be programmed to the OE configuration to properly function.

1. Use the Volvo diagnostic tool to update the configuration software per the Vehicle Identification Number (VIN).
2. When replacing the air dryer cartridge, the cartridge lifetime wear and wetness content will need to be reset. Use Bendix® ACom® Diagnostic Software, or a Volvo® diagnostic tool, to initiate the cartridge reset routines.

OPERATIONAL TEST

Before placing the vehicle in service, perform the following tests.

1. Close all of the reservoir drain cocks.
2. With the engine at 1800 rpm, build up system pressure to system cut-out while observing that both the front axle (secondary) and rear axle (primary) service reservoir dash gauges rise equally in pressure from 0 psi (0 kpa) to system cut-out. If either gauge fails to display this condition, stop testing and check the installation. Note that the GSAT system regenerates/purges with an audible escape of air when system cut-out pressure is reached.

NOTE: The service reservoir pressures will drop during regeneration/purge.

3. Fan down the service brakes to reduce system air pressure to system cut-in. Note that the system – once again – builds to full system pressure and is followed by a regeneration/purge event at the GSAT air dryer primary exhaust.
4. To verify proper park brake function, use the Hand Control Unit (HCU) to release and apply the tractor park brakes several times. The HCU and/or dash cluster should illuminate, indicating a proper park state.
5. It is recommended that the following items be tested for leakage to ensure the GSAT will not cycle excessively:
    a. Air brake system (*Refer to the Bendix® Air Brake Handbook, BW5057,* on B2Bendix.com)
    b. Compressor unloader mechanism per manufacturer's recommendation
    c. GSAT core module
    d. Drain cock and safety valve in first (supply) reservoir (if equipped)
    e. All air connections leading to and from the first (supply) reservoir (if equipped)

TECHNICAL ASSISTANCE

For additional assistance, the Bendix Tech Team can be reached by email at techteam@bendix.com or by phone at 1-800-AIR-BRAKE (1-800-247-2725), option 2. Representatives are available Monday through Thursday, 8:00 a.m. – 6:00 p.m., and Friday, 8:00 a.m. – 5:00 p.m. ET.

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