

Coolant Heater

## **Thermo 90 S.21**

Diesel - 24 Volt



Service Parts List for  
HMMWV (Humvee)

## Topic

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For additional accessory parts refer to the accessories catalogue.

## For replacement heater see:

|  |        |
|--|--------|
| Thermo 90 S.21 . . . . 24 V Diesel . . . . . | Page 4 |
|--|--------|

Column A/N: Indicates which parts are modified, which parts are new:  
A = modification N = new part

Column Description: Sub-assemblies or components (marked by a point) - offset to the right - are contained in the assembly which is offset one point less.

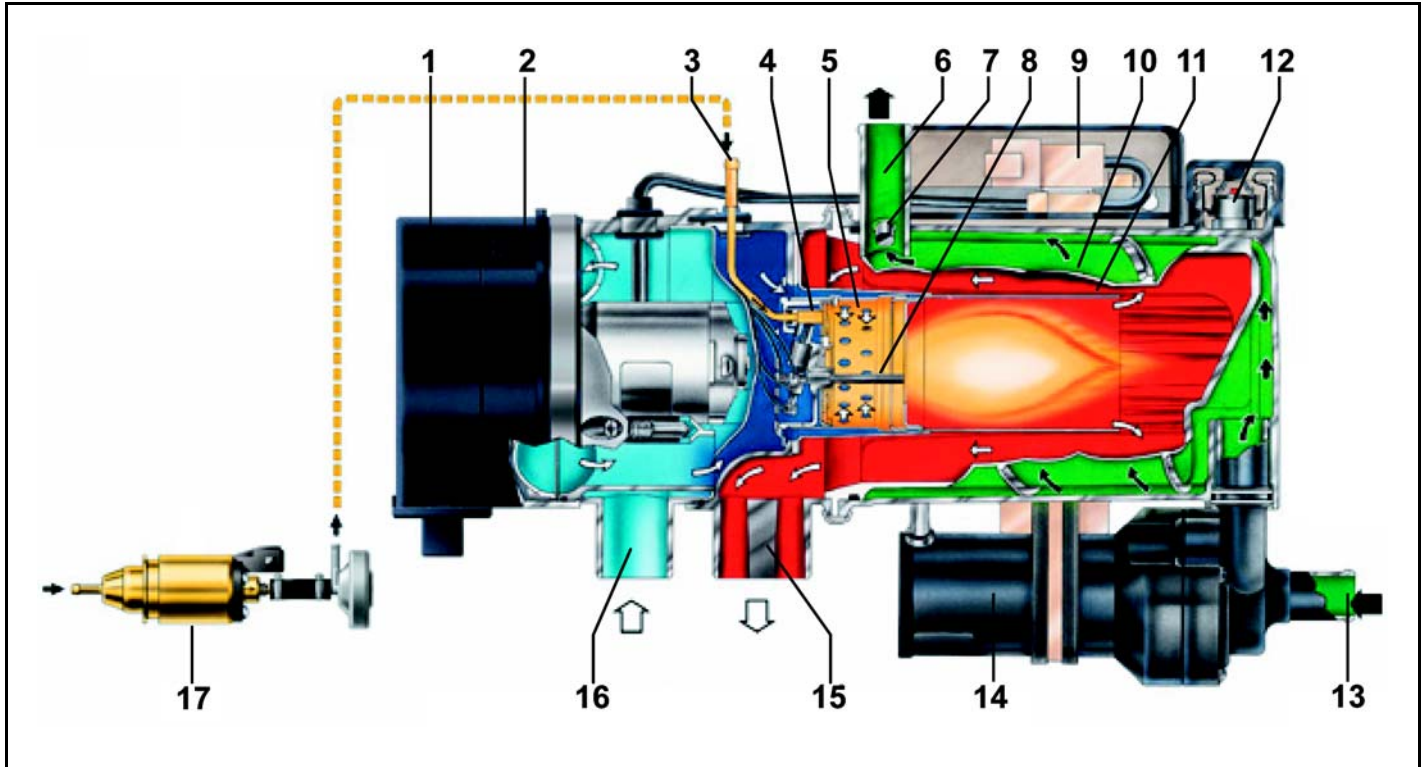
Example:  
fuel pump = assembly  
• solenoid valve = sub-assembly  
• • gasket = component

The parts dependent on voltage are marked:  
12 Volt with red label or dot  
24 Volt with green label or dot

Subject to modification

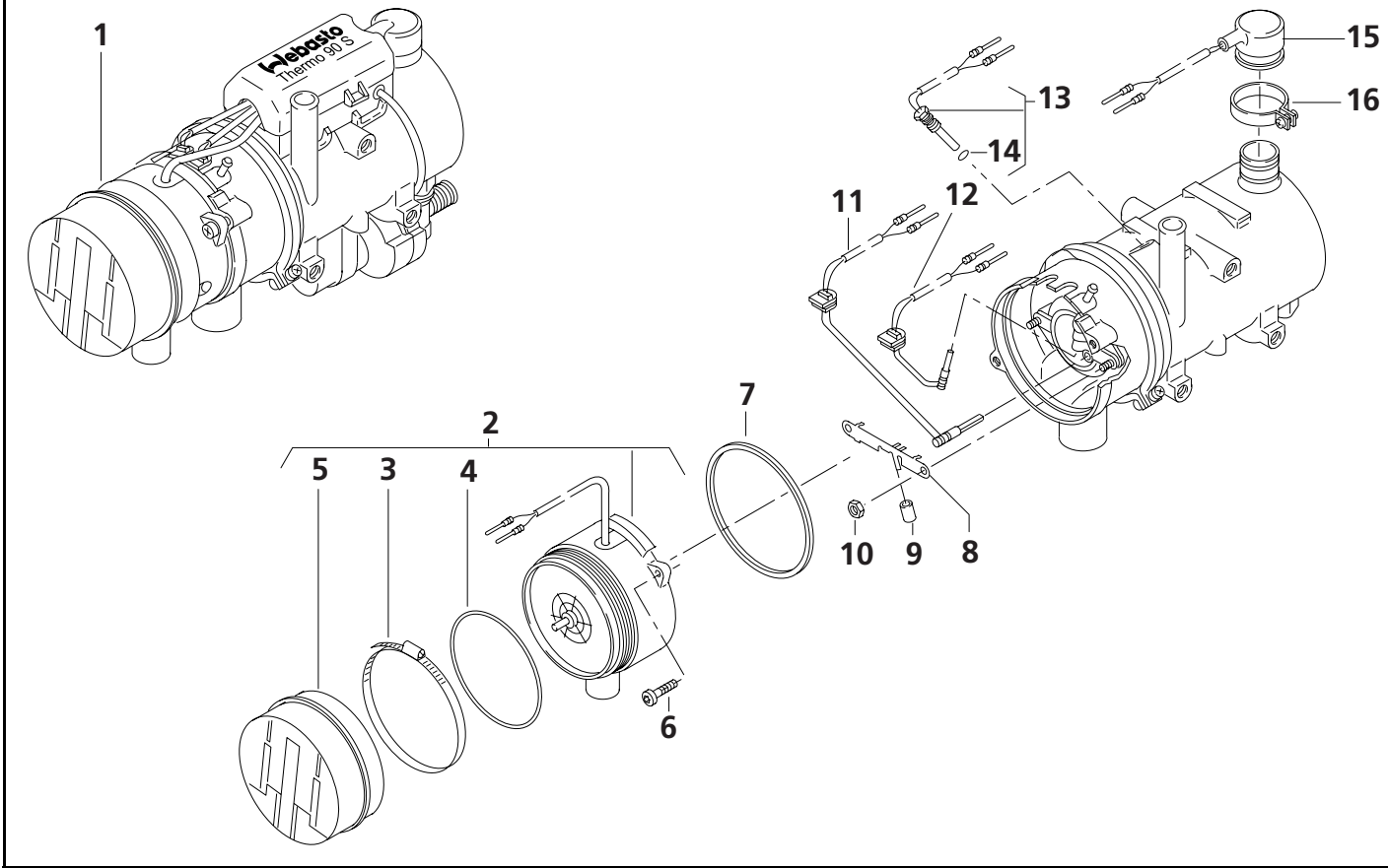
# Overview

# Thermo 90 S.21 Coolant Heater



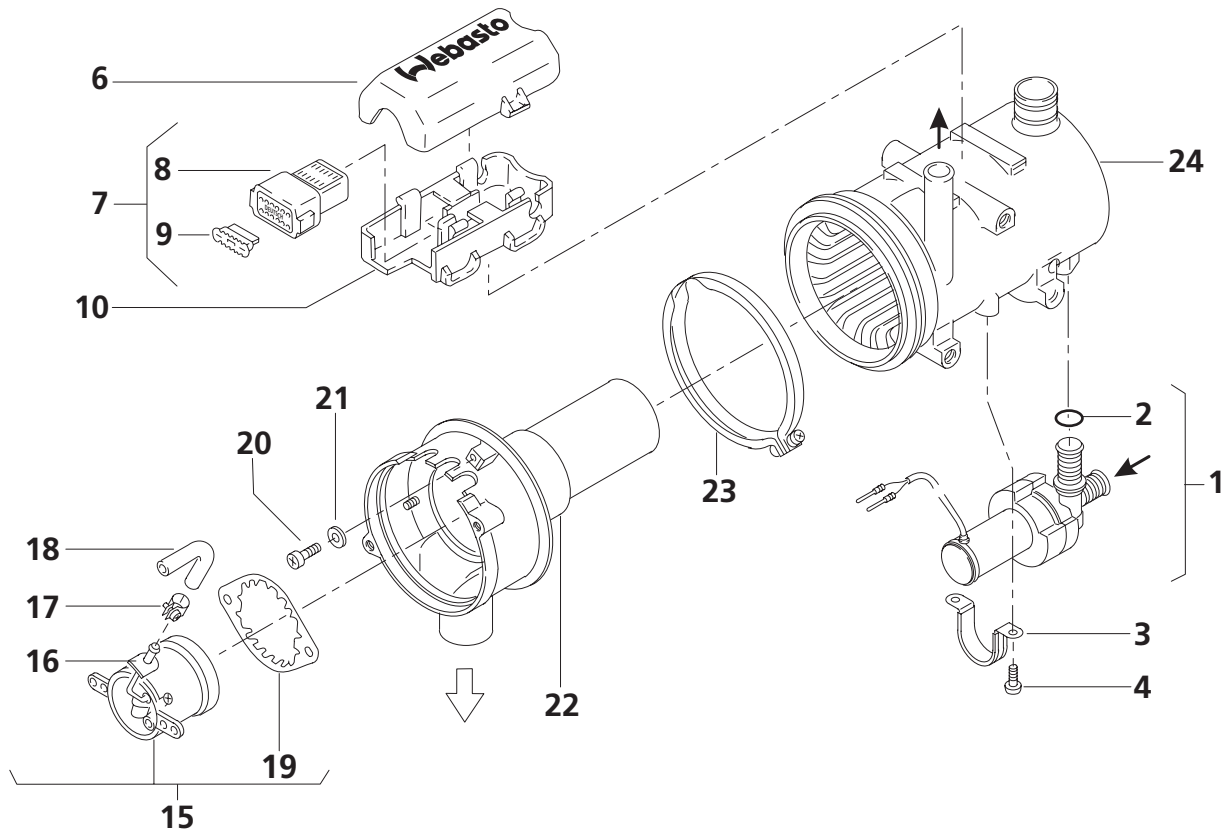
- |                              |                                     |
|------------------------------|-------------------------------------|
| 1 Electronic control unit    | 10 Heat exchanger                   |
| 2 Combustion air fan         | 11 Burner head / combustion tube    |
| 3 Fuel connection tube       | 12 Overheat thermostat              |
| 4 Ceramic igniter            | 13 Water inlet connection           |
| 5 Burner insert              | 14 Water circulation pump           |
| 6 Water outlet connection    | 15 Exhaust outlet connection        |
| 7 Temperature control sensor | 16 Combustion air intake connection |
| 8 Ceramic flame detector     | 17 Fuel pump                        |
| 9 Electrical connection plug |                                     |

# HMMWV - Thermo 90 S.21 - fig. 1



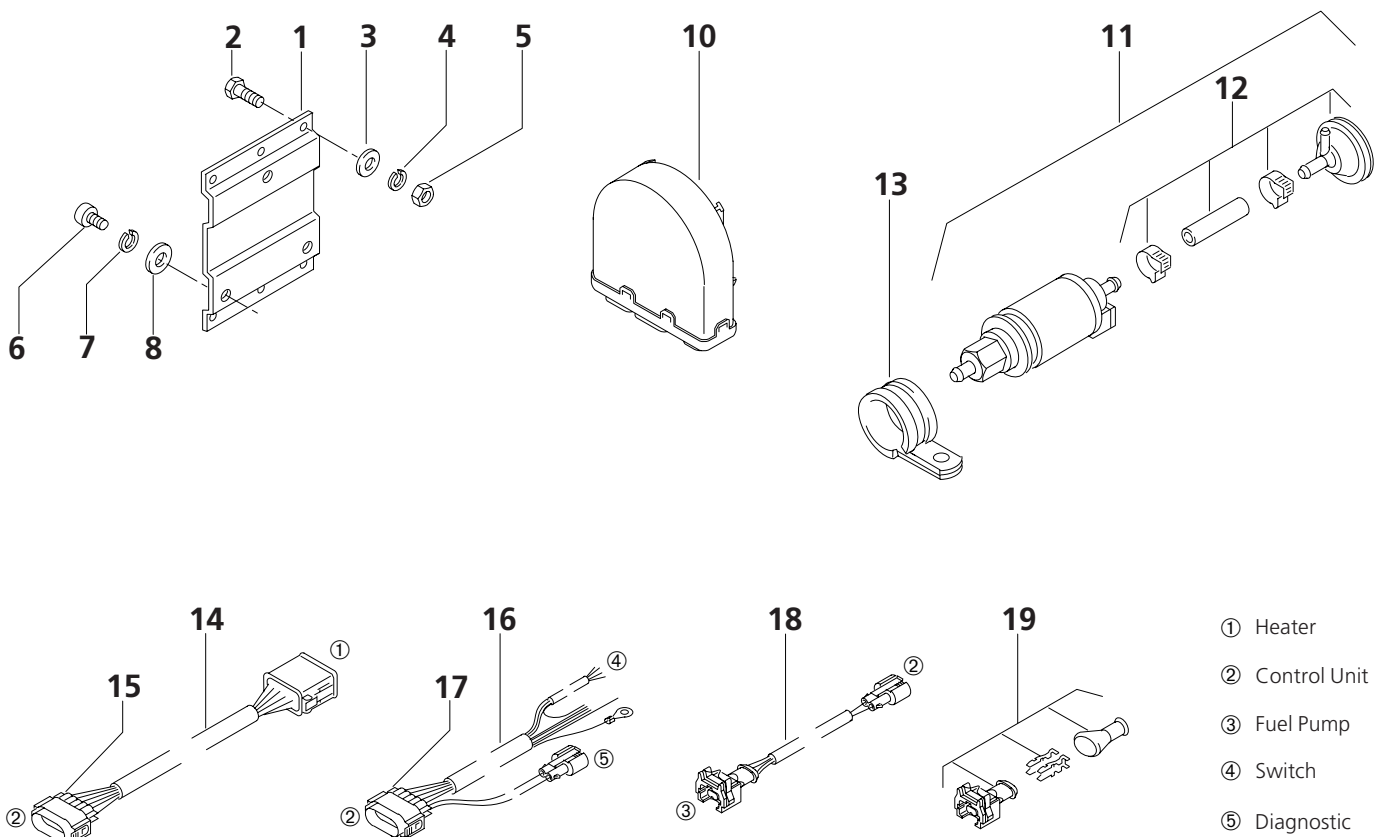
| Item   | Quantity    | Part No. | A/N | Description                                       | Remarks  |
|--|-------------|----------|-----|---|--|
|  | Thermo 90 S |          |     |   |  |
| <b>HMMWV - Thermo 90 S.21 24 Volt, Diesel Coolant Heater</b> |             |          |     |   |  |
| no fig.  | 1           | 5000356B |     | Thermo 90 S.21 24 Volt, Diesel EMI Military Kit   | 5000356B Contains: fuel pump, harnesses, intake, exhaust, & tube.<br><br>For <b>COMPLETE</b> HMMWV Arctic Kit including all brackets, hoses, fuel lines, and switch order direct from D.O.L. Kit # 57K3497 |
| 1  | 1           | 67582C   |     | Thermo 90 S.21 24 Volt, Diesel replacement heater |  |
| <b>Parts for heater</b>                                      |             |          |     |   |  |
| 2  | 1           | 9000110A |     | combustion air fan - complete 24 V                |  |
| 3  | 1           | 139653   |     | • gear clamp Ø 100 - 120 mm DIN 3017              |  |
| 4  | 1           | 34888A   |     | • O-ring gasket Ø 110 x 2 mm DIN 3017             |  |
| 5  | 1           | 88067D   |     | • end cover                                       |  |
| 6  | 2           | 34295A   |     | screw - self tapping M5 x 20 DIN 7500             |  |
| 7  | 1           | 83515B   |     | O-ring gasket id.Ø 109 / od.Ø 113                 |  |
| 8  | 1           | 20817C   |     | support   |  |
| 9  | 1           | 19937B   |     | tube - insulating                                 |  |
| 10   | 2           | 371009   |     | nut - hexagon M5                                  |  |
| 11   | 1           | 82407A   |     | flame detector - ceramic                          |  |
| 12   | 1           | 82410A   |     | igniter - ceramic 24 V                            |  |
| 13   | 1           | 41244F   |     | temperature sensor 90° C (194° F)                 |  |
| 14   | 1           | 431567   |     | • O-ring gasket Ø 7 x 2 mm DIN 3770               |  |
| 15   | 1           | 37955C   |     | overheat protection (bag) 127° C (260° F)         |  |
| 16   | 1           | 82096A   |     | hose clamp Ø 37 mm                                |  |

# HMMWV - Thermo 90 S.21 - fig. 2



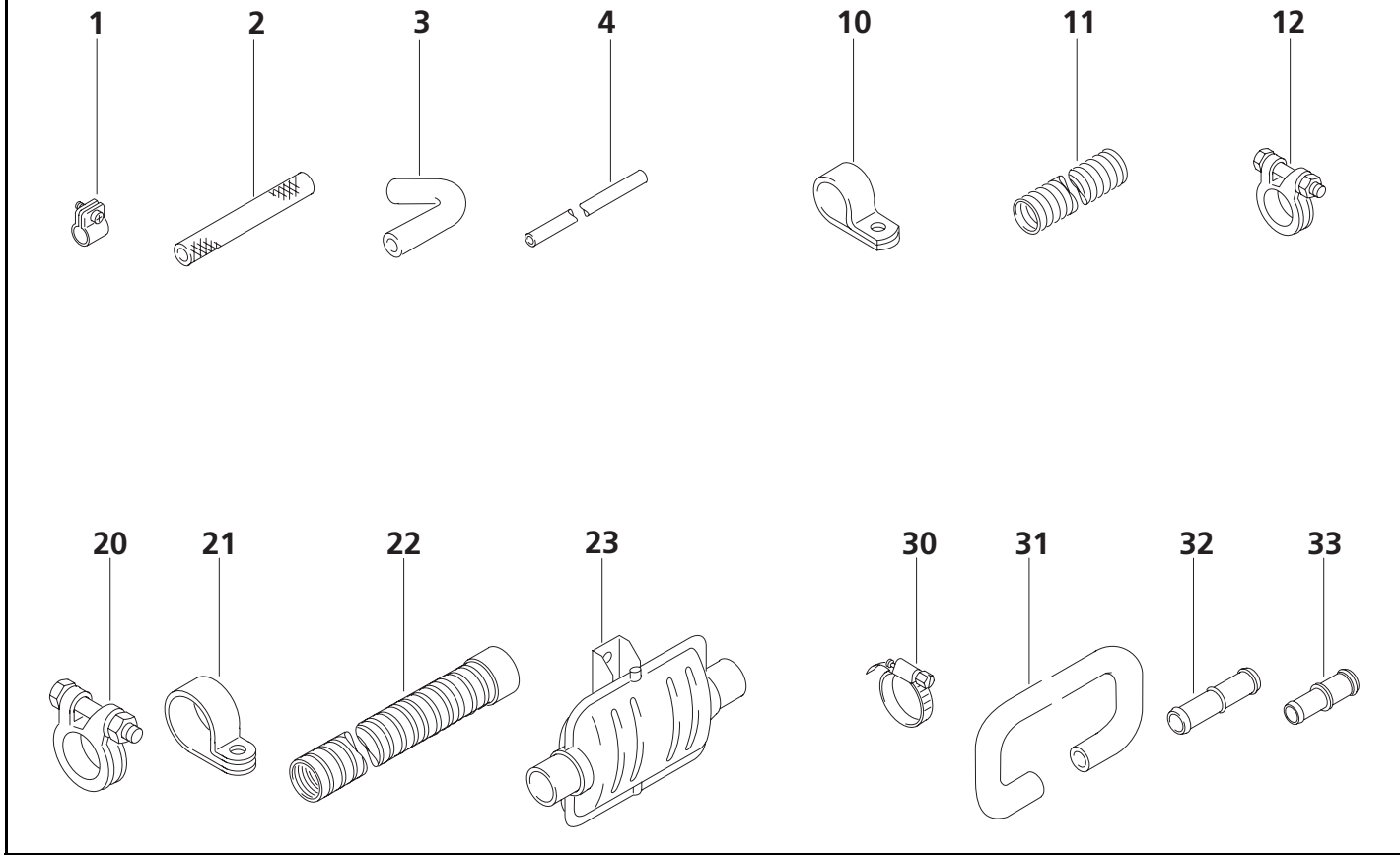
| Item                    | Quantity    | Part No. | A/N | Description                            | Remarks                  |
|-------------------------|-------------|----------|-----|--|--------------------------|
|                         | Thermo 90 S |          |     |  |                          |
| <b>Parts for heater</b> |             |          |     |  |                          |
| 1                       | 1           | 9000111A |     | coolant circulating pump 24 V          | with radio suppression   |
| 2                       | 1           | 22405B   |     | O-ring gasket Ø 19.8 x 2.3 mm DIN 3770 |                          |
| 3                       | 1           | 38634A   |     | mounting clamp                         |                          |
| 4                       | 2           | 35283A   |     | screw - self tapping M5 x 12 DIN 7500  |                          |
| 5                       |             |          |     |  |                          |
| 6                       | 1           | 38641C   |     | protective cap                         |                          |
| 7                       | 1           | 85352A   |     | pin housing - 12 pole (bag)            |                          |
| 8                       | 1           | 85042A   |     | • pin housing - 12 pole                |                          |
| 9                       | 1           | 41025A   |     | • locking wedge                        |                          |
| 10                      | 1           | 38638B   |     | connector housing                      |                          |
| 11-14                   |             |          |     |  |                          |
| 15                      | 1           | 82413A   |     | burner insert - complete Diesel        |                          |
| 16                      | 1           | 46374A   |     | • grommet                              | for fuel connection tube |
| 17                      | 1           | 330027   |     | • clamp - fuel line coupler            |                          |
| 18                      | 1           | 34859B   |     | • fuel line coupler - 90° id.Ø 4.5 mm  |                          |
| 19                      | 1           | 32151B   |     | • swirler - combustion air             |                          |
| 20                      | 1           | 34296A   |     | screw - self tapping M5 x 8 DIN 7500   |                          |
| 21                      | 1           | 153257   |     | washer - flat B5.3 DIN 125             |                          |
| 22                      | 1           | 1301836A |     | burner head - complete 24 V            |                          |
| 23                      | 1           | 21295A   |     | clamp Ø 129 mm                         |                          |
| 24                      | 1           | 86244B   |     | heat exchanger                         |                          |

# HMMWV - Thermo 90 S.21 - fig. 3



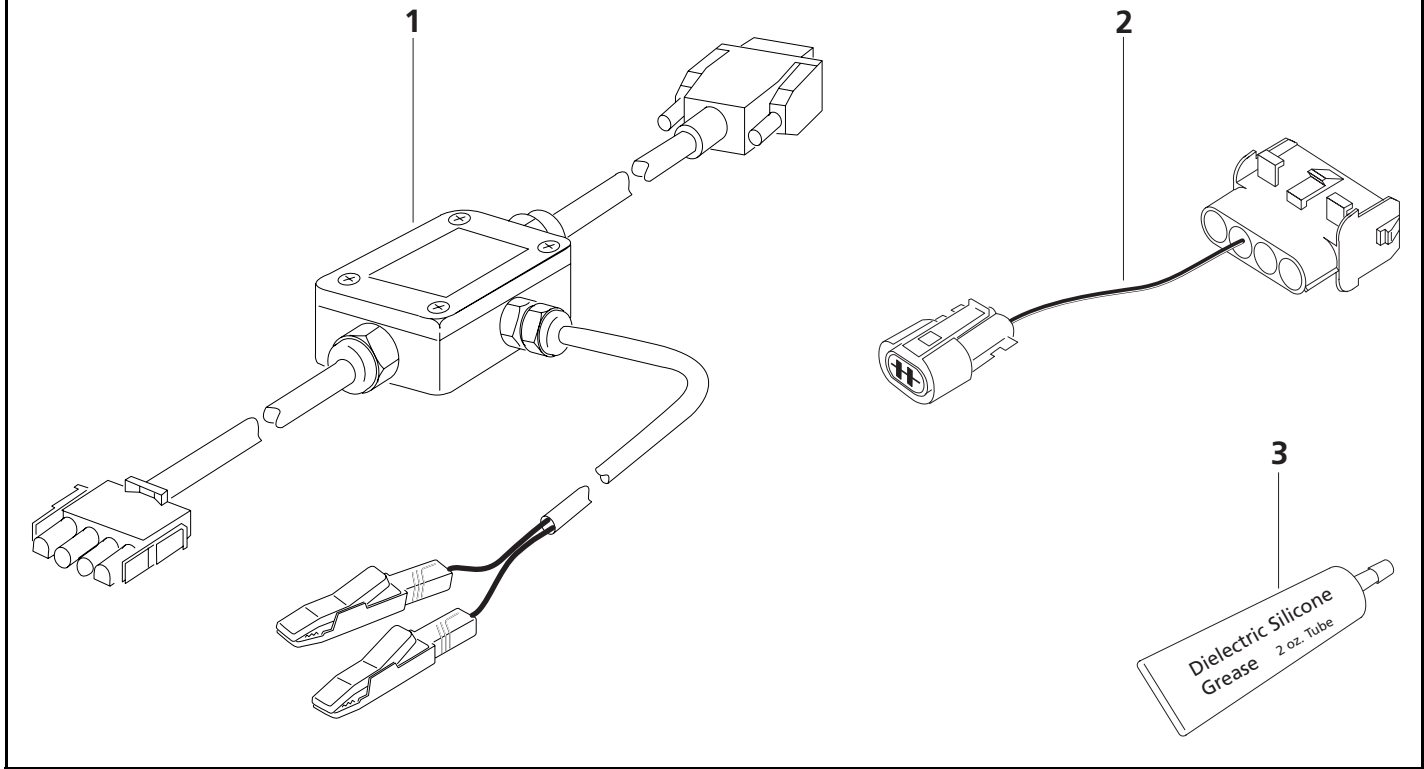
| Item                    | Quantity    | Part No. | A/N | Description   | Remarks |
|-------------------------|-------------|----------|-----|---|---------|
|                         | Thermo 90 S |          |     |   |         |
| <b>Mounting parts</b>   |             |          |     |   |         |
| 1                       | 1           | 80583A   |     | mounting plate - Thermo 90 S                          |         |
| 2                       | 4           | 147249   |     | screw - hexagon M6 x 20 DIN EN24017                   |         |
| 3                       | 4           | 153265   |     | washer - flat B6.4 DIN 125                            |         |
| 4                       | 4           | 152560   |     | washer - locking A6 DIN 128                           |         |
| 5                       | 4           | 146714   |     | nut - hexagon M6 ISO 4032                             |         |
| 6                       | 3           | 902888   |     | screw - allen socket M8 x 16 8.8 DIN 912              |         |
| 7                       | 3           | 902712   |     | washer - locking 5/16 in.                             |         |
| 8                       | 3           | 902714   |     | washer - flat 5/16 in.                                |         |
| 9                       |             |          |     |   |         |
| <b>Electrical parts</b> |             |          |     |   |         |
| 10                      | 1           | 89093C   |     | control unit - SG 1577 24 V                           |         |
| 11                      | 1           | 91473A   |     | fuel pump DP 30.02 24 V                               |         |
| 12                      | 1           | 478814   |     | • membrane damper                                     |         |
| 13                      | 1           | 21499A   |     | pipe clip Ø 35 mm                                     |         |
| 14                      | 1           | 67134A   |     | wiring harness - heater to control unit               |         |
| 15                      | 1           | 88655A   |     | • connector plug - 12 pole                            |         |
| 16                      | 1           | 905782A  |     | wiring harness - power, ground, switch and diagnostic |         |
| 17                      | 1           | 88654A   |     | • connector plug - 12 pole                            |         |
| 18                      | 1           | 67133A   |     | wiring harness - fuel pump                            |         |
| 19                      | 1           | 19439A   |     | connector plug with terminals - fuel pump             |         |

# HMMWV - Thermo 90 S.21 - fig. 4



| Item                                   | Quantity    | Part No.  | A/N | Description                 | Remarks   |
|--|-------------|-----------|-----|-----------------------------|---|
|  | Thermo 90 S |           |     |                             |   |
| <b>Parts for fuel supply</b>           |             |           |     |                             |   |
| 1                                      | 8           | 330027    |     | clamp - fuel line coupler   |   |
| 2                                      | 4           | 5048432B  |     | fuel line coupler           | id.Ø 4.5 mm   |
| 3                                      | 1           | 34859B    |     | fuel line coupler - 90°     | id.Ø 4.5 mm   |
| 4                                      | X           | 50483931A |     | fuel line                   | id.Ø 2 mm   |
| 5-9                                    |             |           |     |                             | per meter   |
| <b>Parts for combustion air system</b> |             |           |     |                             |   |
| 10                                     | 1           | 499021    |     | pipe clip                   | Ø 33 mm   |
| 11                                     | 1           | 5029842A  |     | tube - combustion air inlet | id.Ø 30 mm x 400 mm Lg. stainless steel with end cap  |
| 12                                     | 1           | 100424    |     | pipe clamp                  | Ø 30 - 33 mm  |
| 13-19                                  |             |           |     |                             |   |
| <b>Parts for exhaust system</b>        |             |           |     |                             |   |
| 20                                     | 3           | 367400    |     | exhaust clamp               | Ø 39 - 42 mm  |
| 21                                     | 1           | 126830    |     | pipe clip                   | Ø 42 mm   |
| 22                                     | 1           | 5015527A  |     | tube - exhaust              | id.Ø 38 mm x 1000 mm Lg. stainless steel with end cap |
| 23                                     | 1           | 19562E    | A   | exhaust muffler             | od.Ø 38 mm  |
| 24-29                                  |             |           |     |                             |   |
| <b>Parts for coolant system</b>        |             |           |     |                             |   |
| 30                                     | 6           | 901097    |     | hose clamp                  | Ø 23 - 32 mm  |
| 31                                     | 1           | 50126840A |     | formed hose                 | Ø 20 mm x 2200 mm lg. 180° formed ends                |
| 32                                     | 2           | 66934B    |     | hose connector              | 20 x 20 mm  |
| 33                                     | 2           | 66908B    |     | hose connector              | 18 x 20 mm  |

# HMMWV - Thermo 90 S.21 - fig. 5



| Item                        | Quantity    | Part No. | A/N | Description                           | Remarks  |
|-----------------------------|-------------|----------|-----|---------------------------------------|--|
|                             | Thermo 90 S |          |     |                                       |  |
| <b>Diagnostic equipment</b> |             |          |     |                                       |  |
| 1                           | 1           | 1301728B | A   | PC diagnosis                          | Includes software. Adapter must be ordered separately.                         |
| 2                           | 1           | 92556A   |     | test adapter                          | Thermo 90 S  |
| 3                           | 1           | 50000043 |     | dielectric silicone grease 2 oz.      | For electrical connectors (anti-corrosion)                                     |
| no fig.                     | 1           | 907400   |     | workshop manual - English Thermo 90 S | Also available at <a href="http://www.techwebasto.com">www.techwebasto.com</a> |





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