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Fitting Instructions for Defender LHD 200 Tdi Automotive Air Conditioning Kit

Part Nr. RNAC200

Fits: Defender LHD 200 Tdi

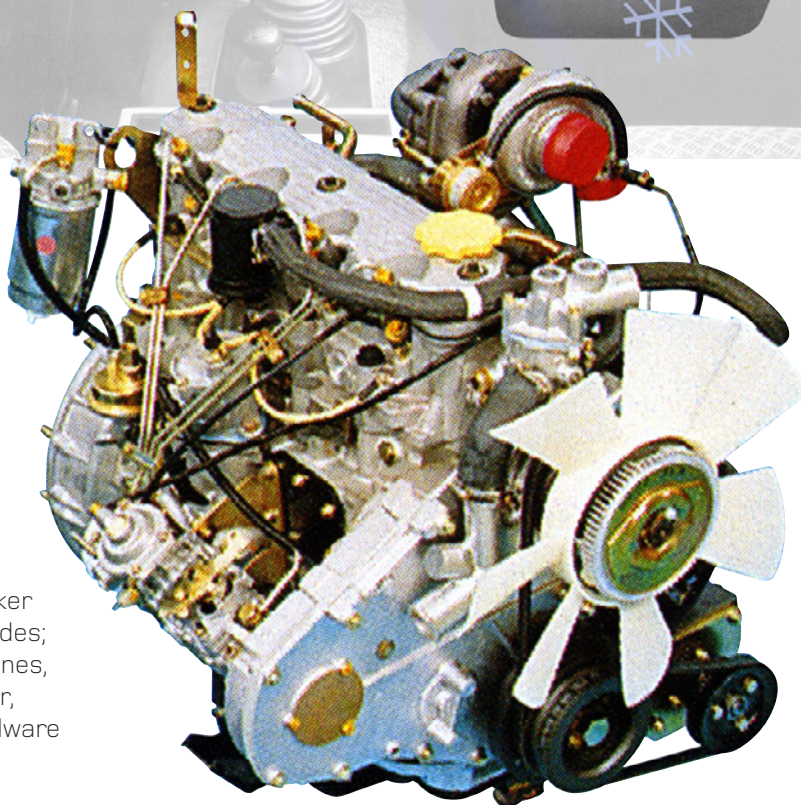
READ ALL INSTRUCTIONS COMPLETELY BEFORE BEGINNING!



Introduction

Update your Defender with the latest R134A Air Conditioning system. Our exclusive Air Conditioning Kit for Defenders incorporates many improved components and features, including better ventilation and blower capacity for a faster, colder air. Superior Range Rover-style vent covers and swiveling louvered vents for footwells deliver cold air where you need it the most.

Stronger switch gear and redesigned sleeker one-piece fascia hold up to the elements. Includes; Lower dash fascia unit, blowers, compressor, lines, hoses, fittings, pulley, tensioner belt, evaporator, condenser and fan unit, receiver-drier, all hardware and fitting instructions.



Fitting Instructions for Defender LHD 200Tdi Automotive Air Conditioning Kit

Suggested Tools

For the install, you could probably do it with your teeth and a rock, but we suggest the following tools:

- Marker, pencil or pen
- Ruler in millimeters, inches
- Electric drill
- Center punch
- Hammer
- 3, 5.5 and 7mm drill bits
- Phillips screw driver
- Flathead screw driver
- Hole saw, High-speed air saw or similar for 30mm, 51mm holes
- A/C Oil or Lubricant
- Various sized wrenches and sockets for M6, M8, M10 and other bolts
- Soldering iron, solder & flux
- Heat shrink tubing
- Hylomar or similar gasket sealant
- Wire cutter and or wire stripper
- A/C system charging equipment
- Utility Pocket Knife (if fitting Dynamat)



Marker,
Pencil or
Pen



Ruler in
Millimeters,
Inches



Center
Punch



Hammer



Metal Drill Bits
3, 5.5 and 7mm



Drill



Metal Bit Hole Saws
25mm, 51mm



Utility Pocket Knife

Drill Bit Conversion	
Millimeters	Drill Size or #
2.4892mm#40
3.9688mm5/32"
5.5563mm7/32"
6.9088mm5/16"
21.8281mm55/64"
30.1625mm1-3/16"
51mm2.007"



Gasket Sealer



Wire Stripper



A/C Oil or Similar
Lubricant



Wire Cutter



Screwdrivers



Various Tools



Heat Shrink



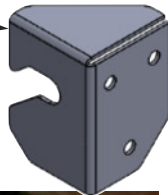
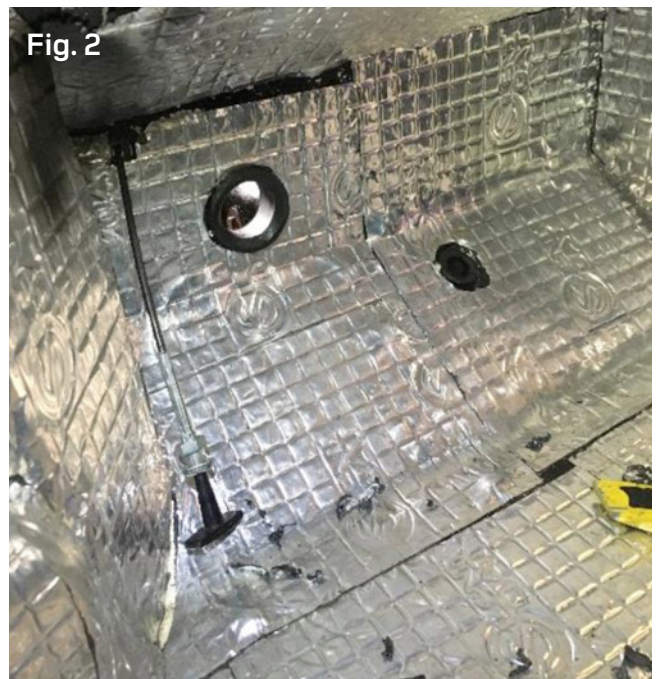
Soldering Iron, Solder & Flux

ENSURE BATTERY IS DISCONNECTED BEFORE INSTALLATION !**Vehicle Preparations, p3, Steps 1–3**

- Step 1.** Disconnect the battery.
- Step 2.** Remove the front grill and grill surroundings and store somewhere safe.
- Step 3.** Remove radiator 'A' frame assembly, and reassemble bonnet/hood latch to slam panel.

INTERIOR, p3–5, Steps 1–12

- Step 1.** Remove speakers from vehicle fascia, retain all parts.
- Step 2.** Remove fuse box cover.
- Step 3.** Locate the brown seven way connector in the area of the fuse carrier brackets and remove the blank connector from the unit. Later instructions follow if your vehicle does not have this connector.
- Step 4.** Drill out the two outer speaker mounting holes either side of the vehicle to 7mm.
- Step 5.** Fit the 90° brackets and weld nut assemblies to the drilled out speaker holes with the fixings provided.
- Step 6.** Remove the bulkhead grommet and drain tube grommet from the vehicle firewall and transmission tunnel.
- Step 7.** Drill hole for the new firewall gromet and fit grommets. Check if there are existing holes, the large hole for the A/C pipes needs to be 51mm and the hole for the drain tube needs to be 30mm. (Fig. 1, Fig. 2).
- Step 8.** Remove the bonnet pull further down on the gearbox turret using the bonnet pump bracket provided, this will avoid fouling on the under dash evaporator moulding.

**Fig. 1****Fig. 2**

Above: Passenger footwell, showing Silent Coat (or Dynamat) style insulation with holes drilled and grommets fitted.

Fitting Instructions for Defender LHD 200Tdi Automotive Air Conditioning Kit**INTERIOR CONTINUED...**

Step 9. Locate the oval firewall grommet on either the right hand or left hand side of the fuse box and cut to allow the white connector on the under bonnet wiring harness to pass through. Later vehicles do not have oval bulk head grommets it is therefore necessary to cut a 25mm hole in the firewall behind the fuse board and fit the grommet supplied on the loom. Before drilling this hole remember to check that there is nothing behind the firewall in the engine bay that could be damaged. (Fig. 3)

Step 10. Lift the under dash unit into position on the vehicle, pushing the round A/C pipe manifold block into the firewall grommet fitted earlier (lubricate if necessary).

Step 11. The 90 degree brackets fitted earlier will fit inside the fascia moulding.

Step 12. Centralise the fascia and using the centre fixing hole as a location, drill a 5.5mm hole into the vehicle dashboard. Fix the fascia to the dash board using the long self-tapping screw provided with the kit.

Step 13. Drill 3mm holes either side of the mounting into the 90 degree brackets and fix with the self-tappers provided in the kit.

Step 14. Re-fit the speakers to the A/C fascia.

Step 15. Connect the 3-way electrical harness (2 x Brown 7-way connectors and 1 x white 4-way connector) to the fuse box connector block and the fascia connector block.

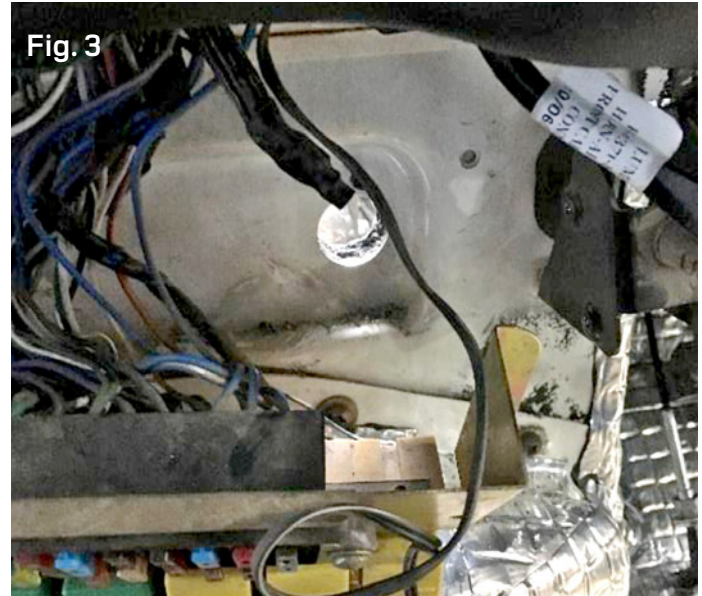
Step 16. FOR VEHICLES not equipped with 7-way brown connector, wire as follows;

- Connect an ignition feed onto white and green wire
- Connect a 30A main feed onto brown wire
- Connect an earth onto blue and black wire

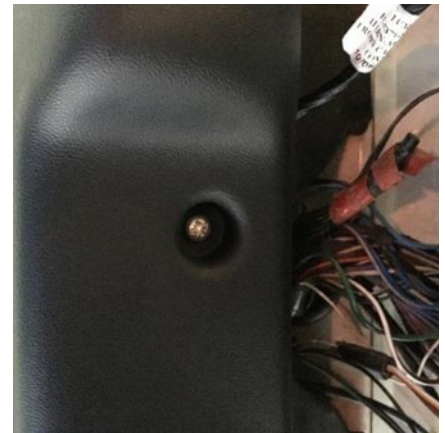
Step 17. From the engine side push the white 4-way connector from the main harness through the oval grommet previously cut. Connect to the reciprocal on the three way harness.

Step 18. Re-fit the fuse box.

Step 19. Fit the drain tube to the evaporator and through the drain tube grommet.



Above: Looking at the interior center bulkhead with fuse panel removed.



ENGINE BAY**COMPRESSOR & ENGINE DRESS, p5-6, Steps 1-7**

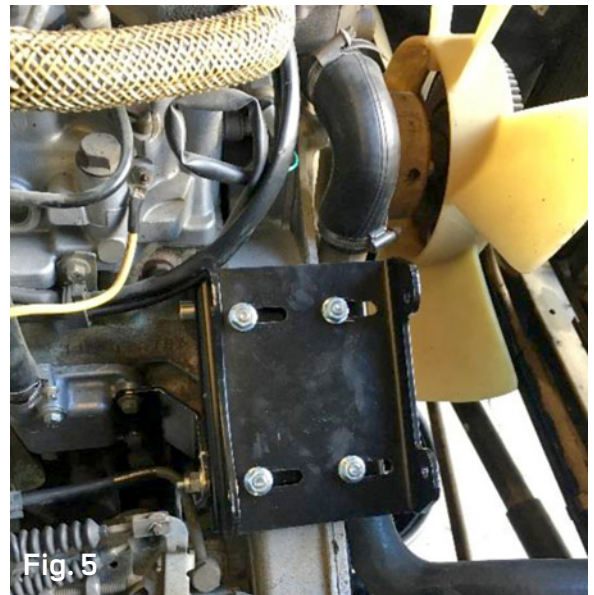
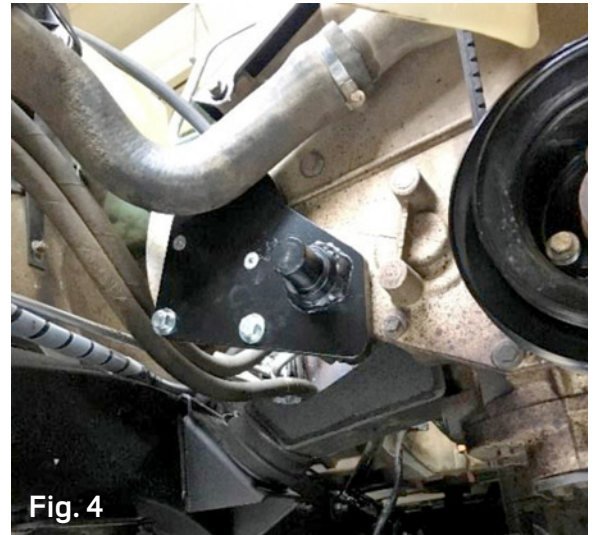
Step 1. Remove and discard original power steering belt.

Step 2. Fit new crank pulley.

Step 3. Fit tensioner pulley plate. Remove the thin plate that is covering the diesel pump mechanism, scrape off any leftover gasket that may be on the engine casing. Apply some sealant to the flange and fasten the new tensioner plate in place using the bolts provided in the kit. (Fig. 4).

Step 4. Fit compressor using the mounting brackets to the mounting points on the engine - do not fully tighten at this point. To mount the compressor bracket assembly you'll need to remove the two M8 bolts going through the engine casing, along with the two bolts on the right hand side of the breather. The longest bolt in the engine casing is replaced with an M8 x 145 set screw, when it is tight this will go all the way through the mounting bracket for the compressor and protrude the other side, allowing you to put a nut onto the bolt to secure the bracket in place from that side of the engine. The other mounting point on the compressor bracket uses the original bolt from the engine to secure it. (Fig. 5)

Step 5. Mount the compressor onto the bracket, use the aluminium spacers included to stop the lugs from shearing off when being tightened. Place the spacers between the lugs and use the M10 x 140 bolts in the kit to fasten the compressor to the mounting brackets. (Fig. 6)



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Step 6. Fit the tensioner arm to the tensioner plate, run the long belt that is included in the kit around the outer groove on the compressor, tensioner arm and the center groove on the bottom pulley. The compressor bracket has slotted holes allowing you to move it from side to side to get the best belt alignment possible. Be aware of the coolant hose, make sure that there is no way the belt can foul this. Once you are happy with the alignment, tighten all four nuts on the compressor bracket to stop any movement. Push the tensioner anticlockwise towards the compressor and tension the belt. (Fig. 7, Fig.8)



Step 7. Fit the new drive belt and power steering pump. Because the new pulley is slightly bigger than the original, the power steering pump belt needs to be changed for the longer belt that is included in the kit. Once fitted this can also be tensioned back up.

ENGINE BAY**CONDENSOR & DRIER, p7, Steps 1–5**

Step 1. Mount the drier bracket to the available holes in the chassis leg on the left of the engine bay (looking at the front of the vehicle). Place the drier into the bracket and tighten the bolt enough so the drier can still spin. (Fig. 9)

Step 2. Pull the radiator/intercooler assembly forward again and re-fit the cowling for the fan, make sure it is located in the appropriate grooves. If there isn't a cut out on the cowling for the compressor you may need to modify it slightly so that it doesn't foul.

Step 3. Re-fit the coolant and intercooler pipes that were previously taken off, note that the system may have lost coolant so be sure to check the level in the header tank and top up if necessary. It may also be necessary to bleed the system to prevent an air lock.

Step 4. Bolt the condenser assembly onto the vehicle in front of the radiator and intercooler, it uses the mounting points where the 'A' frame assembly previously located. Tighten the bottom two bolts fully but leave the top two slightly loose so that you can re fit the grille surround later. (Fig. 10)

Step 5. Note that the bonnet catch may need adjusting later on as the assembly has been moved.

Fig. 9

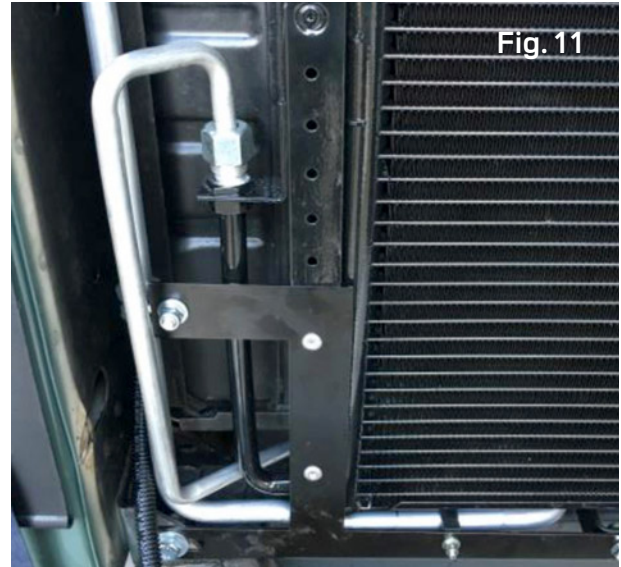
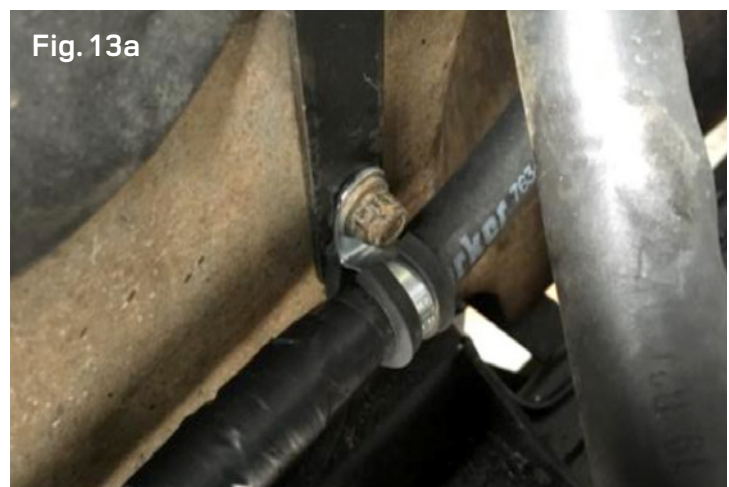
Fitting Instructions for Defender LHD 200Tdi Automotive Air Conditioning Kit**ENGINE BAY, PIPES & HOSES, p8, Steps 1–4**

Step 1. Fit the #6 pipe to the condenser, it may be slightly awkward to navigate past the condenser. Once the condenser side is tight you'll need to secure the pad fitting onto the drier with the supplied hardware and then tighten. (Fig. 11)

Step 2. Fit the #6 pipe from the drier to the evaporator at the bulkhead, again you will need to use the bolts provided in the kit. Tighten the bolt on the drier bracket to secure the drier in place. (Fig. 12)

Step 3. Fasten the #10 hose to the evaporator at the bulkhead with the appropriate fixing bolts and then onto the compressor.

Step 4. Attach the #8 hose to the aluminium pipe under the cowl for the fan, it should be phased so that it avoids the drier and runs along the side of the engine bay. Use the 16mm pipe clip to secure the hose in place, this can be fastened to the bottom mounting point on the header tank bracket. Once this is in place it can be fastened to the compressor, ensure neither of the hoses are rubbing against anything and that they are clear of any heat sources. (Fig. 13/13a)

**Fig. 11****Fig. 12****Fig. 13****Fig. 13a**

ENGINE BAY**UNDER BONNET ELECTRICAL LOOM, p9, Steps 1–5**

Step 1. Run the harness down the side of the engine bay, making sure you have enough length left on the loom for the compressor plug to be connected as well as the fan plug.

Step 2. Fasten the appropriate plugs for the compressor and fan together and secure the plugs in place with tie wraps. (Fig. 14)

Step 3. Mount the two relays on the bulkhead on the vehicle, if possible use the existing mounting points that the other relays are fastened to. If there is no room you may have to drill two holes and use self-tapping screws to secure them in place.

Step 4. There is also an earth cable on the loom that needs to be fixed and grounded to the chassis, anywhere with a clean bare metal surface is suitable for this. (Fig. 15)

Step 5. Finally ensure that the loom is away from any heat sources or moving parts and use tie wraps to secure in place. Re-fit the front grille surround and tighten top condenser mounting bolts along with the radiator assembly bolts. Finally, fit the front grille. (Fig. 16)

CHARGING THE SYSTEM

Step 1. Charge the A/C system with 650g +/- 25g of R134a refrigerant gas.

Step 2. Check for leaks.

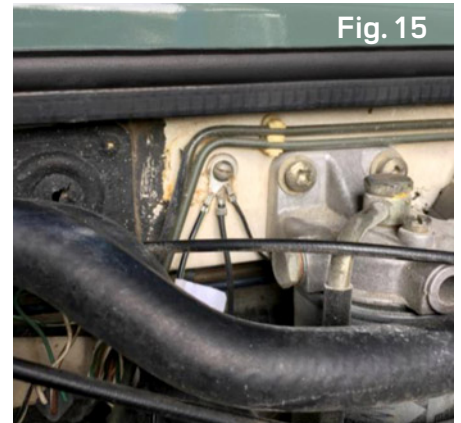
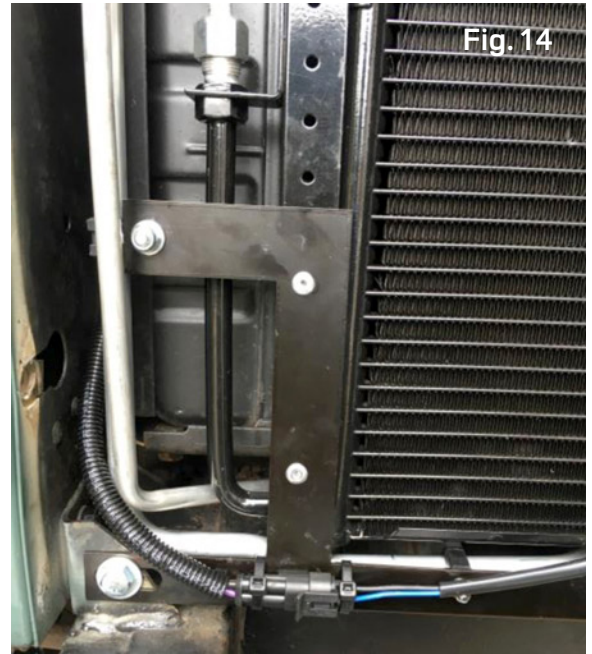
Step 3. Fit A/C charge label to the bonnet slam panel.

TESTING

Step 1. Turn over the engine on the starter motor a few times without firing up the engine, check that the belt is still correctly aligned and that there is still tension there.

Step 2. Start the engine and turn on the A/C, check that the clutch is working as it should.

Step 3. Run the system and check that the condenser fan cuts in at the appropriate pressure and check that it is running in the correct direction (blowing onto the condenser).



Fitting Instructions for Defender LHD 200Tdi Automotive Air Conditioning Kit

COMPONENT LIST



Mount & Drive

QTY	Part Nr.	Description
1	200TDI0006	Compressor Bracket
1	200TDI0005	Breather Bracket
1	200TDI0004	Engine Bracket
2	200TDI0003	Alloy Spacer
1	200TDI0002	Top Hat Bush
2	BCS10-126	M10 x 140 Skt HD
2	N10-009	M10 Nyloc Nut
4	W10-005	M10 Plain Washer
1	BSC8-110	M8 x 25 Skt HD
4	BSC8-127	M8 x 30 Counter Sink
5	W8-004	M8 Flat Washers
5	N8-008	M8 Nyloc Nut
4	N8-016	M8 Flange Nut
1	BSC8-130	M8 x 145
1	8024	Compressor
1	6460MC	A/C Belt (750)
1	6484MC	Power Steering Belt (1350)
1	PLD391	Pulley Tensioner
1	ERR3093	Crank Pulley
1	200TDI2000	Tensioner Mounting Plate
6	W8-010	M8 Spring Washers
4	BSC8-027	M8 x 20 Skt HD
3	N8-008	M6 x 16 Counter Sink
6	W8-004	M8 Flat Washers
2	BSC8-040	M8 x 40 Hex HD



Evaporator Assembly

QTY	Part Nr.	Description
1	1369-958-01DE	Drain Tube
1	1369-956-01DE	Drain Tube Grommet
1	1369-955-01DE	Firewall Grommet
1	W6-006	M6 Mudguard washer
2	1369-954-01DE	Defender Fixing Brackets
4	ST-008	4.2 x 19 Self Tappers (Black)
1	ST-016	#10 x 2.5 Self Tapper
2	1369-953-01DE	Weld nut fixing brackets
4	BSC5-137	M5 x 20 Hex HD
4	W5-008	M5 Spring Washer



Drier Assembly

QTY	Part Nr.	Description
1	M2442	Defender LHD Drier Bracket
2	BSC10-107	M10 x 90 HEW.HD.BOLT-BZP
2	W10-005	M10 Plain Washer
2	W10-011	M10 Spring Washer
2	N6-007	M6 Nyloc Nut
2	W6-003	M6 Plain Washer
4	BSC6-014	M6 x 20 Hex HD Setscrew
6	BSC6-015	M6 x 25 Hex HD Setscrew
4	W6-014	M6 Shake Proof Washer
1	M1195	Pipe Clip Size 10
2	M1429	Pipe Clip Size 12
10	C-001	Cable Tie 200 x 3.6 Black
4	ST-012	Hex HD 16mm Self-Tapper



Hoses and Pipes

QTY	Part Nr.	Description
1	M2473/01	DEFENDER 200TDI #6 PIPE EVAP: DRIER
1	M2692	DEFENDER 200TDI #6 PIPE DRIER: COND
1	M2691	DEFENDER 200TDI #8 PIPE COND: HOSE
1	M2689	DEFENDER 200TDI #8 HOSE PIPE: COMP
1	M2690	DEFENDER 200TDI #10 HOSE COMP: EVAP



Condenser Assembly

QTY	Part Nr.	Description
4	W6-003	M6 Plain Washer
1	MFC2058AE	Condenser 580 x 360
1	M2417	Bottom Condenser rail
1	M2418	Top Condenser rail
1	M2430	Top Condenser rail bracket
1	VA07-AP7/C-31S	Condenser Fan
4	BSC6-035	M6 x 35 Hex HD
8	W6-030	M8 Rubber Washer 30mm O/D
4	N6-007	M6 Nyloc nut
4	W6-006	M6 x 20 O/D washer
8	BR-004	4.8 x 12 Rivets
1	BSC8-026	M8 x 20 Hex HD
1	N8-008	M8 Nyloc Nut
2	W8-004	M8 Plain Washer



Wiring Looms

QTY	Part Nr.	Description
1	RDMP62B	Main Loom
1	RDMP63A	Evap Loom



Bonnet Pull Bracket

QTY	Part Nr.	Description
1	200TDI0009	Bonnet Pull Bracket
3	BR-004	4.8 x 12 Rivets