

# A/C350C AIR CONDITIONER RECOVERY RECYCLING RECHARGING





















# R-134a Recovery, Recycling Evacuation and Recharging



#### Compliant to SAE-J2788 Effective 12/06

**Oil Drain Bottle** - Recovers the used oil during the oil drain process

**Oil Drain Valve** - Drains the A/C system's oil into the oil drain bottle

**Panel Valve, High Side** - Controls the flow between the A/C system's high side and the unit

**Vacuum Pump** - 220V pump designed to remove moisture and air from an A/C system

**Vacuum Pump Relay** - Electrically controlled switch that starts the vacuum pump when energized by the circuit board

**Internal Storage Vessel (ISV)-** The refillable refrigerant storage vessel inside the unit.

**Source Tank** - A tank of new refrigerant used to refill the internal storage vessel.

Sight glass - Used to view vacuum pump oil level

Scale Assembly - Measures the amount of refrigerant being charged and recovered



**Base and Foot Assembly** -Used to reduce excessive pump vibration **Check Valve** - Allows flow in one direction only

**Compressor** - Compressor moves the refrigerant from the A/C system being serviced into the internal tank on the unit

**Compressor Oil Return Assembly**- Removes the compressor oil from the refrigerant that is leaving the compressor. The stored oil is returned to the compressor with a cap tube that provides a constant oil return at a controlled rate.

**Compressor Relay** - Electrically controlled switch that starts the compressor when energized by the circuit board

**Control Panel Assembly** - User interface panel for controlling refrigerant recovery, recycling and recharging

**Control Panel Overlay** - Affixed to control panel sheet metal, the overlays is used to identify gauges, displays and controls

**Filter Drier** - Used to remove moisture and particles from refrigerant. Should be changed every time 150lbs of refrigerant is recovered

Gauge, High Side - Monitor high-side pressure of the vehicle being serviced

**Internal Storage Vessel—(ISV)**- Storage tank that the recovered and recycled refrigerant is stored. Vapor, liquid and air purge access is on top of tank.

**ISV Pressure Gauge** - Shows the pressure inside the internal storage vessel

**Manifold Block Assembly** - Internal block assembly that contains solenoids, check valves and switches. Refrigerant will flow pass through the manifold assembly for proper distribution.

**Manifold, Gauge & Valve Assembly** - Manual valves and gauge assembly that controls the flow of refrigerant to or from the unit.

**Panel Valve, Low Side** - Controls the flow between the A/C system's low side and the unit

**Pressure Relief Valve** - Spring loaded safely valve use to releases pressure from internal tank assembly if pressure exceeds 350psi

**System Oil Separator** - Heat exchanger with high-side coils that provide internal heat to the canister causing saturated vapor and accumulated liquid refrigerants to evaporate. This process prevents liquid refrigerant from entering the compressor and separates the refrigerant oil.







| 1  | AIR PURGE          | Eject non-condensable gas   |
|----|--------------------|---|
| 2  | RECOVER            | Recovers refrigerant from the vehicle's A/C system  |
| 3  | VACUUM             | Evacuates refrigerant from the vehicle's A/C system   |
| 4  | CHARGE             | Charges refrigerant to the vehicle's A/C system   |
| 5  | MENU               | Allows users customize unit setting and performs maintenance job  |
| 6  | LCD Screen         | Displays operational information  |
| 7  | START/ENTER        | Confirms operation or start process   |
| 8  | STOP/CANCEL        | Stops or cancels operation  |
| 9  | KEYBOARD           | Inputs data from here   |
| 10 | DATABASE*          | Allows user to achieve vehicle service information regarding refrigerant type, refrigerant quality etc. |
| 11 | UP/DOWN            | Movers in up and down direction   |
| 12 | POWER SWITCH       | Switch ON or OFF the unit   |
| 13 | MULTI-LANGUAGE     | Specifies the meaning in English, Chinese, Japanese and Korean  |
| 14 | HIGH-SIDE GAUGE    | Shows the A/C system's high-side pressure   |
| 15 | LOW-SIDE GAUGE     | Shows the A/C system's low-side pressure  |
| 16 | LOW-SIDE VALVE     | Controls the flow between the A/C system's low side and the unit  |
| 17 | HIGH-SIDE VALVE    | Controls the flow between the A/C system's high side and the unit                                       |
| 18 | ISV PRESSURE GAUGE | Shows the pressure inside ISV   |

# Specification

| Limited vacuum: | -30inHg        | Recovery Rate: | 400g/Min       |
|-----------------|----------------|----------------|----------------|
| Package Size:   | 928X610X1415MM | Machine Size:  | 873X564X1266MM |
| Gross weight:   | 100KG          | Net weight:    | 80KG           |
| Rate voltage:   | 220V           | Rate power:    | 300W           |











#### Air Purge

Air Purge Recover Vacuum Charge Menu

Air Purge for 2 sec...

0:01

| Air Purge Recover Vacuum Char | ge VMenu 🔪 |
|-------------------------------|------------|
|                               |            |
| Notice tank gauge, press      |            |
| Enter to continue purging     |            |
| 0:02                          |            |
|                               |            |
| Enter                         | Exit       |

# **Recovering Vehicle A/C System Refrigerant**

| Fir Arge Recover Vacuum | Charge Menu |
|-------------------------|-------------|
| Recover Weight:         | 0.000kg     |
| Connect hoses,          |             |

Open high and low valves

Please set recover weight

| Air Auge Recover | Vacuum (Charge (Menu ) |
|------------------|------------------------|
| Recover com      | plete                  |
| Recovered        | $\rm X.XXX~_{Kg}$      |

Next, Drain Oil?

| Fir Auge (Recover) (Vai | cuum Charge (Menu ) |
|-------------------------|---------------------|
| Oil-drain comp          | lete                |
| Drained                 | XX:XX               |
| Next, Vacuum?           |                     |

| Air Aurge Recover | Vacuum (Charge ( Menu ) |
|-------------------|-------------------------|
| Recovering        |                         |
| Recovered         | $\rm X.XXX_{Kg}$        |
|                   | Stop                    |

| Fir Arge: (Recover) (Vacuum) (Charge) (Menu) |       |  |
|--|-------|--|
| Draining oil.                                |       |  |
| Drained                                      | XX:XX |  |
|  |       |  |





# Vacuuming Vehicle A/C System

| Air Purge Recover Vac | <b>uum</b> Charge (Menu ) |
|-----------------------|---------------------------|
| Vacuum:               | 15:00                     |
|                       |                           |
|                       |                           |

Please set vacuum time

| Ar Purge Recover 1   | acuum Charge (Menu / |  |
|----------------------|----------------------|--|
| Vacuum comp          | olete                |  |
| Vacuumed             | XX:XX                |  |
| Next, Keep Pressure? |                      |  |

| Ar Arge Recover <b>Vacuum</b> Charge Menu            |
|--|
| Keep pressure for 3 min<br>Notice gauges for leakage |
| 00:00  |
|  |

Fir Arge Recover **Vacuum** Charge Menu Pressure-keeping complete Notice gauges for leakage

03:03

Next, Inject Oil?

| Ar Arge CRecover Vacuum Charge | Menu |
|--------------------------------|------|
|                                |      |
| Oil-injection:                 |      |
| Notice oil-inject bottle       |      |
| View Data for Database         |      |
| Enter                          | Exit |
|                                |      |

| fir Arge 🤇 Recover 🔍 Vacuum 🕻 Charge 🗸 | Menu |
|--|------|
| Injection oil                          |      |
| Notice oil-inject bottle               |      |
| 5                                      |      |
| Press ENTER to pause                   |      |
| Press EXIT to exit                     |      |
| Pause                                  | Exit |

Enter

Next, charge?

| Air Auge 🤇 Recover 🔍 Vacuum 🖓 Change 🤇 Menu | $\overline{)}$ |
|---|----------------|
| Oil-inject pause                            |                |
| Notice oil-inject bottle                    |                |
|   |                |
| Press ENTER tocontinue                      |                |
| Press EXIT to exit                          |                |

| Fir Arge (Recover) (Vacuum) (Charge (Menu) |  |
|--|--|
| Oil-inject complete                        |  |
|  |  |
|  |  |
|  |  |



Stop





Exit





# Charging A/C System Refrigerant

Fir Arge Recover Vacuum Charge Menu

Charge Weight: 0.500 Kg Close the LP valve, charge on the high side only Select Data from Database

Please set charge weight

| Air Auge Recover | Vacuum Charge Menu |
|------------------|--------------------|
| Charge com       | plete, Disconnect  |
| Hoses and s      | tart cleaning      |
|                  | C                  |
|                  |                    |
| Charged          | X.XXX Kg           |
|                  |                    |
| Next, Clean      | Hoses?             |

| Air Auge (Recover) | Vacuum Charge Menu  |
|--------------------|---------------------|
| Charging           |                     |
| Charged            | X.XXX <sub>Kg</sub> |
|                    | Stop                |

# Recycle

| Air Purge \ Recover | (Vacuum) (Charge ( Menu ) |
|---------------------|---------------------------|
| Recycle             | 10:00                     |
| Enter               | İit                       |
| Enter               | Exit                      |

| fir Arge: < Recover < Vacuum < Charge < Mi | enu  |
|--|------|
|  |      |
| Refrig.weight out of range                 |      |
|  |      |
| Disable menulal                            |      |
| Disable recycle!                           |      |
| Enter                                      | Exit |

| [fir Auge√Recover √Vac | cuum (Charge (Menu ) |
|------------------------|----------------------|
| Recycling              |                      |
| Recycled               |                      |
|                        | X:XX                 |
| Enter                  | Exit                 |





### **Empty ISV Weight Calibration**

- Fir Arge CRecover Vacuum Charge Menu
- 1. Calibration...
- 2. Replace Filter
- 3. Replace Vacuum Pump Oil
- 4. ISV Initialize
- 5. Software Updates

Enter

Exit

Exit

| Ar Purge (Recover) (Vacuum) (Charge (Menu) |    |
|--|----|
| 1. Cal. ISV Scale                          |    |
| 2. Cal. Empty ISV                          |    |
|  |    |
|  |    |
|  |    |
|  |    |
|  |    |
| Enter Ex                                   | it |
|  |    |

#### Ar Arge (Recover) (Vacuum) (Charge (Menu)

Cal. Empty ISV

Ensure ISV is empty, and calibrated ISV scale

Enter

Fir Arge KRecover KVacuum KCharge KMenu

Cal. Empty ISV

Ensure ISV is empty, and calibrated ISV scale Value: XXXX

Exit

Enter









#### Software Update

| fir Purge 🤇 Recover 🛛 Vacuum 🖓 Charge 🤇 Menu |  |
|--|--|
|--|--|

Please input UPDATE CODE

Note: find your UPDATE CODE in new software package. Enter Exit

### Maintenance

| Fir Purge (Recover (Vacuum) (Charge ) <b>Me</b> | nu 🔪 |
|---|------|
| 1. Calibration                                  |      |
| 2. replace Filter                               |      |
| 3. replace Vacuum Pump Oil                      |      |
| 4. ISV Initialize                               |      |
| 5. Software Updates                             |      |
|   |      |
| Enter   | Εv   |

# Leakage Check

Fir Purge CRecover Vacuum Charge Menu

0:02

Exit

| Ar Arge CRecover (Vacuum) Charge Menu        | fir Auge Recover Vacuum Charge Menu |
|--|-------------------------------------|
| Leakage check                                | Leakage check                       |
| Disconnect hoses<br>Open high and low valves | Vacuum for 2 min                    |
| Vacuum for 2 min?                            | Exit                                |

| Ar Purge (Recover Vacuum) Charge | Menu |
|----------------------------------|------|
| Leakage check                    |      |
| Leakage check complete           |      |
|                                  | 3:00 |
| Notice gauges for leakage        |      |
|                                  | Exit |



Leakage check

Keep pressure for 3 min











#### **ISV Scale Calibration**

| fir Aurge Recover | (Vacuum) (Charge) | Menu | / |
|-------------------|-------------------|------|---|
| 1. Calibratio     | on                |      |   |

Exit

Exit

- 2. Replace Filter
- 3. Replace Vacuum Pump Oil
- 4. ISV Initialize
- 5. Software Updates

Enter

| Ar Arge C Recover Vacuum Charge C Me | inn / |
|--------------------------------------|-------|
|                                      |       |
| Cal. ISV Scale                       |       |
|                                      |       |
| Please unload ISV.                   |       |
|                                      |       |
|                                      |       |
|                                      |       |
| Enter                                | Exit  |
|                                      |       |

| fir Purge 🛛 🥀 e | cover Vac | uum VCharge | e 🗸 Menu 🔪 |
|-----------------|-----------|-------------|------------|

Cal. ISV Scale

Please put 5Kg weight on ISV scale

Enter

| Fir Auge CRecover Wacuum Charge Menu |
|--------------------------------------|
| 1.Cal. ISV Scale                     |
| 2.Cal. Empty ISV                     |
|                                      |
|                                      |
|                                      |
|                                      |
|                                      |
| Enter Exit                           |
|                                      |

| Ar Arge C Recover Vacuum V | Çharge (Menu) |
|----------------------------|---------------|
| Cal ISV Scale              |               |
| Please unload ISV.         |               |
| Zero:                      | XXXX          |
| Enter                      | Exit          |

| fir Arge (Recover) (Vacuum) (Cha                   | rge (Menu ) |
|--|-------------|
| Cal. ISV Scale                                     |             |
| Please put 5Kg weight<br>on ISV scale<br>Standand: | XXXX        |
| Enter  | Exit        |





### **Replacing Filter-Drier**

Fir Arge CRecover Vacuum Charge Menu

Filter has expired! Shutdown and change filter

Exit

| fir Purge (Recover Vacuum) (Charge ) Me | nu 🔪 |
|---|------|
| 1. Calibration                          |      |
| 2. Replace Filter                       |      |
| 3. Replace Vacuum Pump Oil              |      |
| 4. ISV Initialize                       |      |
| 5. Software Updates                     |      |
|   |      |
| Enter                                   | Exit |

| fir Purge (Recover) (Vacuum) (Charge (Mer | Ē   |
|---|-----|
|   |     |
|   |     |
| Shutdown and change filter                |     |
| Shatao wii and change inter               |     |
|   |     |
|   |     |
|   | Exi |

| Ar Arge Recover Vacuum Charge Menu |
|------------------------------------|
|                                    |
| Confirm filter replaced            |
| Commin inter replaced              |
|                                    |
|                                    |
| Exit                               |









#### **Replacing Vacuum Pump Oil**

| Fir Purge CRecover Wacuum Charge Menu |
|---------------------------------------|
| 1.Calibration                         |
| 2. Replace Filter                     |
| 3. Replace Vacuum Pump Oil            |
| 4. ISV Initialize                     |
| 5. Software Updates                   |

Enter

Enter

| Ar Arge Recover Vacuum Charge Me | nu   |
|----------------------------------|------|
|                                  |      |
| Confirm pump oil replaced        |      |
|                                  |      |
|                                  | Exit |

Ar Arge CRecover Vacuum Charge Menu

Shutdown and replace oil.

Exit

Ar Arge CRecover Vacuum Charge Menu

Vacuum pump oil replaced. Pump oil: 010.0 hours

Exit

### Internal Storage Vessel (ISV) Initial Setting

Exit

Exit

| fir Arge (Recover Vacuum) Charge   Menu |
|---|
| 1.Calibration                           |
| 2.Replacing Filter - Drier              |
| 3.Replacing Vacuum Pump Oil             |
| 4.ISV Initialize                        |
| 5.Software Update                       |
|   |

| fi <sup>r</sup> Arge (Recover) (Vacuum | 1 Charge Menu |
|--|---------------|
| ISV initializing                       |               |
| Initialized                            | 00:00         |
|  |               |
| Enter                                  | Exit          |

| Fir Arge Recover Vacuum | 1 Charge Menu |
|-------------------------|---------------|
| ISV initialization      |               |
| Init time:              | 10:00         |
|                         |               |
| Ensure ISV is empt      | ty,           |
| Otherwise damage        | device!       |
| Enter                   | Exit          |

| fir Purge Recover Vacu | um Charge Menu |
|------------------------|----------------|
| ISV initialize co      | mplete         |
| Initialized            | 00:10          |
| initiani200            | 00.10          |
|                        |                |
| Next Recover to        | add refrig?    |





#### **Check Filter-Drier Capacity Value**

| Fir Auge (Recover) (Vacuum) (Charge ) M | enu  |
|---|------|
| 1.Filter-Drier Capacity                 |      |
| 2.Vacuum Pump Oil Time                  |      |
| 3.Pressure-Keeping Time                 |      |
| 4.Select Language                       |      |
| 5.Change Password                       |      |
| 6.Recycle in Vacuuming                  |      |
| Enter                                   | Exit |

| fir Auge Recover Vacuum                        | Charge Menu                   |
|--|-------------------------------|
| Set Filter-Drier Ca<br>Default Value:<br>Used: | apacity<br>068.0Kg<br>000.0Kg |
| Enter  | Exit                          |

# **Check Vacuum Pump Oil Time**

| Fir Purge (Recover Vacuum) Charge   Me |      |
|--|------|
| 1.Filter Weight                        |      |
| 2.Vacuum Pump Oil Time                 |      |
| 3.Pressure-Keeping Time                |      |
| 4.Select Language                      |      |
| 5.Change Password                      |      |
| 6.Recycle in Vacuuming                 |      |
| Enter                                  | Evit |

| Air Auge 🤇 Recover | Vacuum Charge (Menu / |
|--------------------|-----------------------|
| Set vacuum p       | oump time target:     |
| Used:              | 010.0  hours          |
| 0.000              | 000.0 hours           |
| Enter              | Exit                  |

### **Change Pressure Keeping Default Time**

| fir Purge Recover Vacuum Charge Me |      |
|------------------------------------|------|
| 1.Filter Weight                    |      |
| 2.Vacuum Pump Oil Time             |      |
| 3.Pressure-Keeping Time            |      |
| 4.Select Language                  |      |
| 5.Change Password                  |      |
| 6.Recycle in Vacuuming             |      |
| Enter                              | Exit |

| Ar Arge (Recover) (Va | cuum Charge (Menu 🔪 |
|-----------------------|---------------------|
|                       |                     |
| Set pressure-ke       | eping time:         |
|                       | X:XX                |
|                       |                     |
| Enter                 | Exit                |





### **Password Change**

| Fir Purge Recover Vacuum Charge Me | <b>u</b> n / |
|------------------------------------|--------------|
| 1.Filter Weight                    |              |
| 2.Vacuum Pump Oil Time             |              |
| 3.Pressure-Keeping Time            |              |
| 4.Select Language                  |              |
| 5.Change Password                  |              |
| 6.Recycle in Vacuuming             |              |
| Enter                              | Exit         |

| fir Purge C. Recover 🛛 Vacuum 🖓 Charge 🖉 Menu 🔪 |   |
|---|---|
|   |   |
| Input new password:                             |   |
| VVVV  |   |
| λλλλ  |   |
| Enter Exit                                      | ŗ |

| Fir Auge (Recover) (Vacuum) (Charge (Menu) |  |
|--|--|
|  |  |
|  |  |
| Input current password:                    |  |

# XXXX

| Enter | Exit |
|-------|------|
|       |      |

fir Arge (Recover) (Vacuum) (Charge (Menu

Confirm new password:

Enter

XXXX

Exit

Exit

# Language

Ar Arge CRecover Vacuum Charge Menu 1.Filter Weight 2. Vacuum Pump Oil Time 3.Pressure-Keeping Time 4.Select Language 5.Change Password 6.Recycle in Vacuuming Enter Exit

| Ar Arge (Recover) (Vacuum) (Charg | je (Menu / |
|-----------------------------------|------------|
| Select Language:                  |            |
| 中文                                |            |
| English                           |            |
| Enter                             | Exit       |

# **Recycle Setting in Vacuuming Process**

| fir Auge CRecover Vacuum Charge Menu |  |  |
|--------------------------------------|--|--|
|                                      |  |  |
|                                      |  |  |
| Recycle in Vacuuming?                |  |  |
|                                      |  |  |
| Yes                                  |  |  |
| No                                   |  |  |
| Enter Exit                           |  |  |



Exit



#### **Database Function**

| Database | $\backslash$ |
|----------|--------------|
|----------|--------------|

Enter

- SPX Database
  Motor Info Database
- 3. Custom Database
- 4. History Record

| PASSAT L4 1.8 L     |       |
|---------------------|-------|
| Refrigerant Kg:     | 0.7   |
| Oil g (new):        | 250   |
| Refrigerant type:   | R134a |
| Oil g (condenser):  | 25    |
| Oil g (evaporator): | 50    |
| Oil g (hose):       | 25    |
| Oil g (driver):     | 25    |
| Enter               | Exit  |

| Database                   |      |
|----------------------------|------|
| 1. Look up Custom Database |      |
| 2. Add New Data            |      |
|                            |      |
|                            |      |
|                            |      |
|                            |      |
| Enter                      | Exit |

| Database | Year |          |
|----------|------|----------|
| 2007     |      |          |
| 2006     |      |          |
| 2005     |      |          |
| 2004     |      |          |
| 2003     |      |          |
| 2002     |      |          |
| 2001     |      |          |
| Enter    |      | <br>Exit |
|          |      |          |

| fir Arre Recover Vacuum Charge Menu |          |  |
|-------------------------------------|----------|--|
| Vacuum Time:                        | Auto     |  |
| Charge Weight:                      | 0.500 Kg |  |
| Oi-injection:1                      | Auto     |  |
| PASSAT L4 1.8L                      |          |  |
| Refrigerant Kg:                     | 0.7      |  |
| Oil g (hose):                       | 25       |  |
| Please set vacuum time              |          |  |

| Database                                    |                                      |
|---|--------------------------------------|
| Year:<br>Maker:<br>Model:<br>Engine_size L: | 2008<br>SHANGHAIVW<br>PASSAT<br>1.8L |
| Enter                                       | Exit                                 |