

# User Manual for IE FR888 Coolant Flush Refrigerant Flush Recycle Recover System

This system is a professional flushing machine for A/C system. It's unique in the way to diagnose the condition of refrigerant and oil with visual inspection through the glass window (worldly patent); also it's unique in the way to flush the compressor, condenser, evaporator, and TX valve.



## *I Before Start & Preparation...*

- *Open the cabin and Check if the valve is open*



Open the cabin and check if the valve besides the Receiver Drier is turned on. The valve should be on all the time except when replacing the receiver drier (see *Maintenance*)

- *Drain the old oil and make sure all old oil and refrigerant is drained.*

(Note: if old oil not drained, it can be recycled to the machine and cause damages)

- *Fill the Back Tank with Refrigerant:*



- ✓ Connect the red hose of the back tank with the red hose (liquid) of the 60 KG tank to fill in refrigerant. Connect the blue hose of the back tank with the blue hose of the FR888 (\*the empty tank weighs 8 kg, maximum input of refrigerant is 20 kg )
- ✓ Turn on the scale and you will see the refrigerant volume into the tank (max 20 kg, empty tank weight is 8 kg).
- ✓ After reach the volume wanted, disconnect the red hoses of the tank.

## *Fill the Scale Container with Refrigerant:*

### *Option 1 **Recommended!** Fill the scale container from the 60 kg tank*

- Connect the red hose of the FR888 to the red hose (liquid) of the 60 kg tank.
- Switch the power valve to “Recycling”
- Turn on the red hose of the 60 kg tank; turn on the red hose and blue hose of the back tank
- Turn on the red hose of the 60 kg tank.
- Turn on Valve 3 fill in refrigerant (\*minimum 5 kg, maximum 7 kg)
- You will see the floating ball on the side glass window rise up to the amount you input.
- After filling complete, turn off the red hose of the 60 kg tank; when unloading light on, switch the power valve to “Stop” and turn off valve3

### *Option 2: fill the scale container from the back tank*

- Switch the power valve to “Recycling”
- Turn on the “Power Switch” of the scale and turn on the “Start” of the scale to fill in

- refrigerant (\*minimum 5 kg, maximum 7 kg)
- After filling complete, turn on the “Stop” of the scale and switch the power valve to “Stop” when unloading light is on.

## *II Diagnosis & Examine the Oil & Refrigerant Condition*

- ✓ Turn on the light switch of glass window
- ✓ Connect the high and low pressure hose to the car
- ✓ Check the high pressure gauge and low pressure gauge to see if the pressure is normal
- ✓ Turn on the ignition and A/C system.
- ✓ Push “oil condition”, the existing oil and refrigerant inside the car A/C system will run through the glass window (\*The more bubbles and the whiter the color the condition is, the more the A/C system needs to be cleaned and flushed.
- ✓ Turn on Valve 2 to recycle the refrigerant inside the machine back to the car A/C system
- ✓ Turn off Valve 2

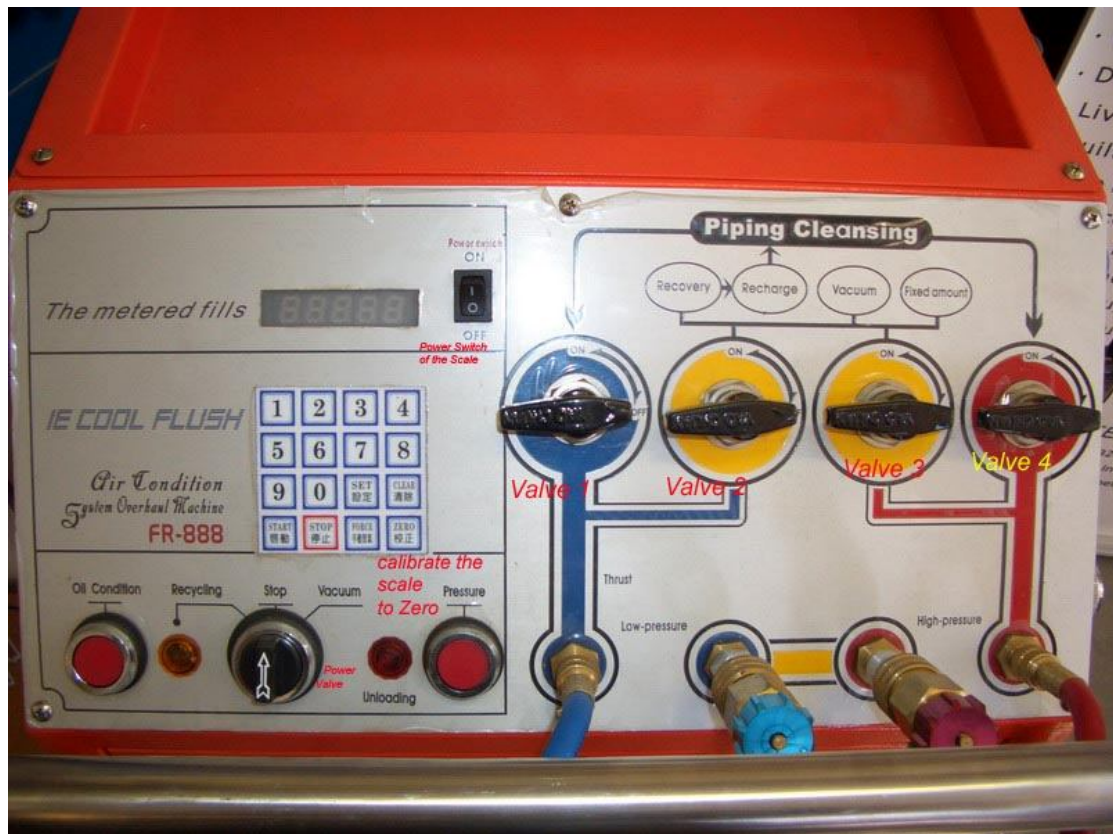


Note: If there is no refrigerant in the car A/C system, pls turn on Valve 1 to put in some refrigerant in the A/C system until the low pressure gauge is 30 psi.

## *III Flush & Recycle the A/C System (only when the A/C system needs to be cleaned):*

The FR888 system can perform complete flushing function, including dynamic and static flushing and thus deeply clean the pipe, dryer filter, TX valve, compressor, evaporator, and condenser.

1. Dynamic Flushing: Dynamic flushing means to flush the A/C system with the ignition and A/C on; it can be flushed in only one direction



- Have the ignition and A/C on
- Switch the power valve to “Recycling”. (\*when red light is on it means FR888 is adjusting pressure; when red light and orange light are both on, it means FR888 is ready for flushing)
- Turn on the valve 3 & 1 (\*first turn on Valve 3 when see refrigerant flowing through the glass window then turn on Valve 1). The system is doing dynamic flushing now and you can see the refrigerant condition in the glass window.
  - ✓ During dynamic flushing, the mechanic needs to pay constant attention to the high & low pressure gauge and the volume of refrigerant bubbles. The system will automatically stop sending refrigerant when high pressure gets > 140 psi and start sending again when pressure gets lower. (\*during dynamic flushing, high pressure can't be < 50 or > 140. If high pressure gets >200, turn off Valve1 and turn on Valve 2 to release pressure.) (\*It is recommended to fill Nitrogen gas into the system to increase flushing power when the high pressure system is blocked.)
  - ✓ After finishing dynamic flushing (the bubbles decrease), turn off A/C
- 2. Static Flushing: Static flushing means to flush the A/C system with the ignition on and A/C off; it can be flushed in 2 directions.
  - Have the ignition on but A/C off
  - Switch the Power Valve to “Recycling”
  - Turn on Valve 3 & 1 to flush the compressor then turn off Valve 3 & 1. Turn on Valve 2

& 4 to flush the condenser and receiver drier. After bubbles decrease then turn off Valve 2 & 4.

- Turn on Valve 1 & 4 to fill the A/C system with refrigerant. Turn off Valve 1 & 4 and Turn on Valve 2 & 3.
- When finishing static flushing, FR888 will automatically stops the flushing when low pressure is < 50 psi and the red light “unloading” on will be turned on.

#### *IV Vacuum / Recover the A/C System:*

After the A/C system is cleansed dynamically and statically from the flushing function, now we need to vacuum the refrigerant out of the car.

- Have both ignition and A/C off.
- Switch the power valve to “Vacuum” and turn on Valve 2 & 3.
- Turn off Valve 2 & 3 when low pressure gauge is around 29/30 psi.



- Drain the Old Oil:
  - ✓ During vacuuming, mechanic can start draining the oil slowly.
  - ✓ Turn on the “Manual Oil Drainer” valve SLOWLY. The dirty oil will be released through the drainer to the plastic container. (\*when draining the dirty refrigerant, it will split out therefore turn the valve on very slowly in case of making a mess on the clothes and on the floor). After oil draining is finished, turn off the “Manual Oil Drainer” valve.
- Filling New Oil Into the Oil Glass Tube:
  - ✓ Spin off the cap and then input proper volume of new oil into the glass tube. After finishing, put the cap on and tighten the cap.
- Purify the Refrigerant Oil: side valve
  - ✓ To purify the new oil, we can vacuum the air out of the oil glass pipe
  - ✓ Turn on the black valve on top of the oil tube to allow air in and out of the glass



tube.

- ✓ Turn on the “Purify Oil Valve”
- ✓ Switch the Power Valve to “VACUUM”. You will see bubbles and when small bubbles disappear (only big bubbles on the bottom)
- ✓ Switch the Power Valve to “Off”. Turn off the “Purify Oil Valve” and turn off the black valve on top of the oil tube.

## *VI Recharge the A/C System:*

- Input New Oil
  - ✓ To put new oil in the car A/C system, turn on the black valve below the oil tube to allow new oil into the system.
  - ✓ The power valve position is “Vacuum”
  - ✓ Turn off Valve 2 and turn on Valve 3.
  - ✓ If oil input speed is too slow, you can turn on the valve on the top of the oil tube and press “Pressure” to increase the speed for oil recharge.
  - ✓ Turn off the black valve below the oil tube when putting proper amount of oil into the system.
- Input New Refrigerant to the Car A/C system
  - ✓ To put new refrigerant into car A/C system, turn on the “Power Switch” of the scale.
  - ✓ To input the volume of refrigerant, please follow this procedure: “Clear” → “Set” → “\_\_\_ g” (\*to enter the volume of refrigerant, for example, to input 500g, need to input 00050 on number plate of the scale) → “Set” → “Start” (\*Zero refers to calibrate the scale to zero reading)
  - ✓ Turn on Valve 3
  - ✓ After filling enough volume, turn off valve 3
  - ✓ Turn on the A/C

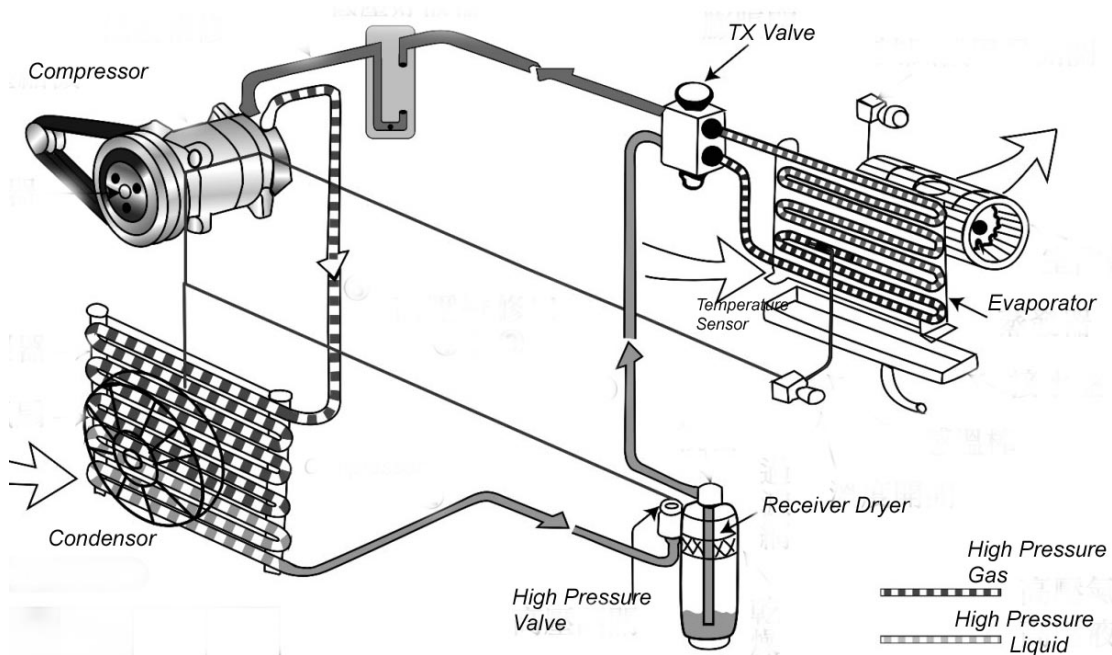
## *VII Service Done. Check the A/C System and the Temperature*

- Please check if the A/C system is running smooth and the temperature is cool enough.
- After confirm service done, it is necessary to retrieve the remaining refrigerant back to the car.
  - ✓ Switch the power valve to “Recycling”
  - ✓ Turn off the high pressure hose
  - ✓ Turn on Valve 2
  - ✓ After finishing, turn off Valve 2
  - ✓ Remove the high pressure hose and low pressure hose from the car.

### FR888 Maintenance:

- Clean and Flush the interior of FR888:
  - ✧ Hook up high & low pressure hose onto FR888
  - ✧ Switch the power valve to “Recycling”
  - ✧ Turn on Valve 1 & 3 or Valve 2 & 4 to clean the system
  - ✧ When red light “Loading” is on, switch the power valve to “Stop”
  - ✧ Remove the power of FR888
- Check the vacuum motor
  - ✧ The oil level inside the motor should be at least half of the full level.
  - ✧ If the color of the oil inside the motor becomes yellow and dirty, please change the oil.
- Change Receiver Drier
  - ✧ Receiver drier should be changed once a year depends on usage frequency.
  - ✧ Close the valve inside the cabinet in front of the receiver drier (the valve should always be on except when changing receiver drier)
  - ✧ Turn of Valve 3 and Valve 4
  - ✧ Switch Power Switch to “Recycling” until the machine stops itself
  - ✧ Change the receiver drier
  - ✧ Turn on the valve in front of receiver drier (still power switch “Recycling”)
  - ✧ Turn off Valve 4 until the machine stops
  - ✧ Turn off Valve 3 and switch the Power Switch to “Off”

### A/C System Chart I



## A/C System Concept II

