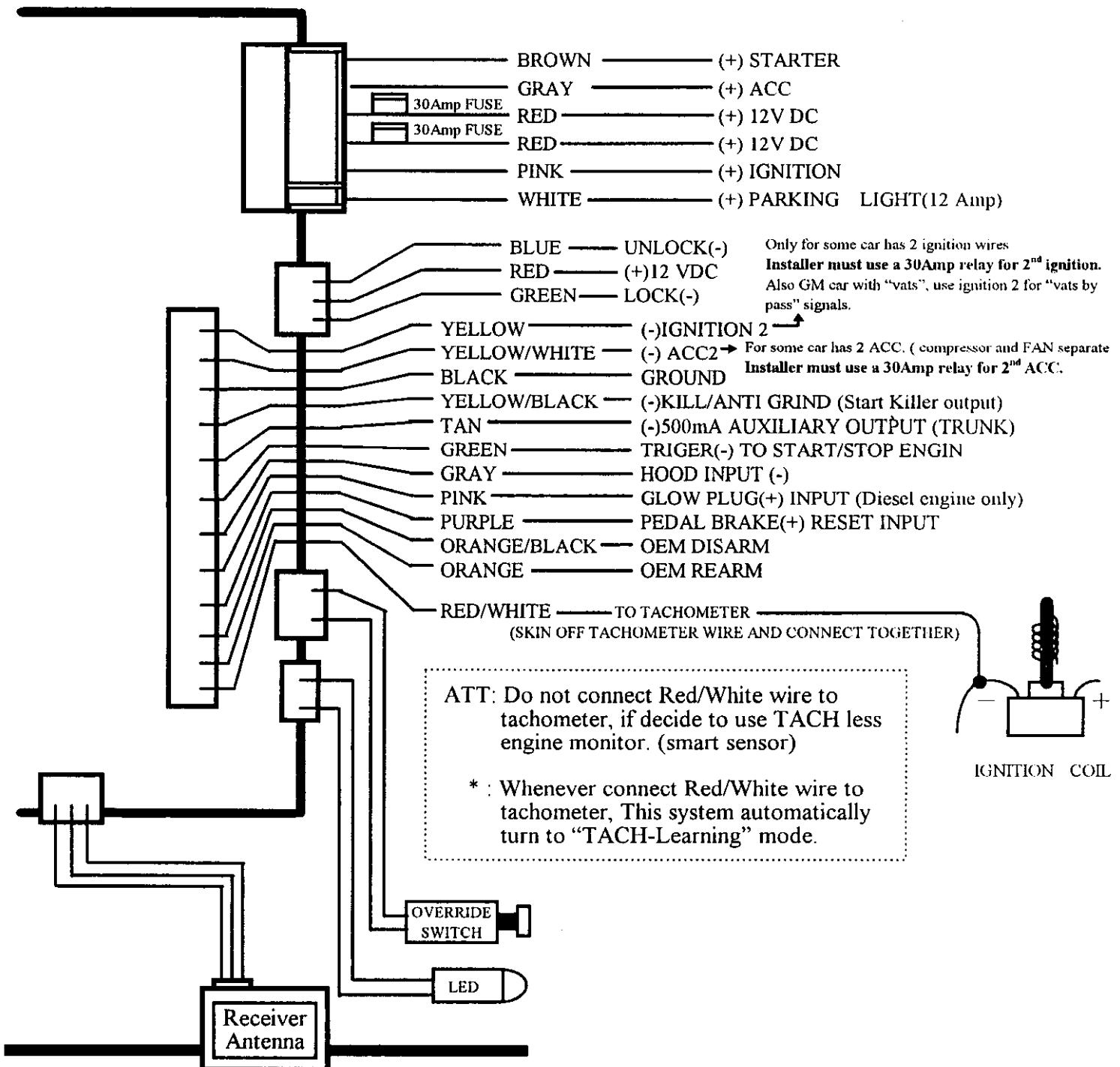


RS900 WIRING DIAGRAM

(F2WA-1)



1. Before use "TACH less monitor mode" to remote start the car after installation, **make sure turn on Head Light of car over 10 seconds**. (only at 1st time after installation)
2. this system has TACH less engine monitor feature, even without connect any detection wire, still will have smart cranking ability, cranking time auto-adjust depends on voltage changing .

Remote Start Unit

Operational Description/Request

3/5/99

Inputs

Power 1	+12 Volts for Starter and Lights
Power 2	+ 12 Volts for Ignition 1 and 2
Brake	+ 12 Volt for brake pedal switch
Hood	Grounding input for hood switch
Glow Plug	Grounding input for diesel vehicles
Tach	Positive/Negative pulse input (engine monitor)
Program button	(+) 2 pin plug-in pushbutton switch
Start Trigger	Negative trigger to activate Remote Start without Tx.
Ground	Chassis ground

Outputs

Ignition 1	On-board relay, 30 Amp (Use as Ignition Input Also)
Ignition 1	500mA negative
Ignition 2 (Acc)	On-board relay, 30 Amp
Lights	On-board relay, 12-15 Amp
Lock	500 mA. Negative/positive
Unlock	500 mA. Negative/positive
Starter	On-board relay, 30 Amp
Trunk Pop	500 mA. negative
OEM Disarm	500 mA. negative
OEM Re-arm	500 mA. negative
Kill/Anti-Grind	500 mA. negative

* See attached drawing of our current Remote Start Unit to use as reference for input/output connections.

Tx Button Functions

Button 1

Lock

Button 2

Unlock

Button 3

Remote Start Engage/Disengage

Button 4

Trunk pop (Aux.)

Encoding/Decoding Format

Random code transmission (32 bit minimum).

Door lock/unlock

- 0.75 or 3.5 seconds
- Lock with Tx lock button
- Lock upon Remote Start Request
- Lock 2 seconds after started w/key
- Lock 4 seconds after Remote Start Abort (if programmed)
- Unlock with Tx unlock button

Kill/Anti-Grind

Engage

- When locked w/Tx.
- Upon Remote Start.
- 4 seconds after engine starts with key.

Disengage

- When unlocked w/Tx (unless remote started)
- Upon Brake Reset (unless engine running w/key).
- 2 seconds after turning Ignition key off (except in idle-down mode).

Kill/Anti-Grind Reset

Reset Kill/Anti-Grind with Ignition on and program button pressed for 4 seconds (Lights flash 2 times for confirmation). This feature is needed if system cannot be unlocked with Tx in the event it has been lost or has a weak battery.

Ignition lock/unlock (programmable)

- Lock doors one time only when brake released *from depressed position* after engine started with key (unless door open).
- Lock doors when brake released *from depressed position* if remote started AND Ignition key on.
- Unlock doors after Ignition switch turned off and brake released from depressed position.
- Unlock doors in Idle-Down *when brake released from depressed position*.

Double unlock pulse (programmable)

Upon disarm w/ Tx button 2, pulse driver's door unlock twice with 0.5 second delay between end of first pulse and beginning of next pulse.

OEM Re-arm (programmable)

When system aborts remote start, wait 2 seconds and activate this output for 4 seconds. Lock doors in the middle of this pulse. This simulates the vehicle door being open while locking which is required to arm some OEM Alarms.

Tachless Engine Monitor Mode

We would like to have a mode available that requires no physical connection to an RPM reference source. This may consist of monitoring the vehicle's battery voltage before and after a remote start attempt to determine if the voltage has increased due to the engine starting. There may be other methods that you might know of. We would like to have your input on this. We would also like to be able to use a pre-determined crank time for the starter output in either the tachless or tach mode which is described in this document.

Tach Finder Mode:

Note: The purpose of this mode is to help the installer locate a valid engine monitor source which is used to disengage the starter once vehicle is running.

- Open hood, start vehicle with key and press program button.
- Lights come on solid to confirm tach finder mode enabled.
- When valid pulses are detected on tach wire, flash parking lights. If pulses are not valid, lights stay on solid until hood closed.
- In vacuum mode flash lights if tach input is active (high) and tach finder mode engaged. If tach input is low in vacuum mode, lights stay on solid.
- When lights are flashing in tach mode, pressing program button again will learn and store tach pulses (not required in Vacuum or Timed Start mode). Confirmation consists of parking lights on solid while button is pressed. Lights resume flashing when button released or after 4 seconds of continuous button press.
- Abort tach finder mode and turn off lights when hood closed or ignition turned off.

Remote Start Sequence

1. Activate 1/2 second pulse (OEM disarm).
2. Turn parking lights on.
3. Turn on Kill/Anti-Grind output.
4. After OEM disarm pulse, turn on both Ignition 1's and Accessory.
5. Three (3) seconds after Ignition on, engage starter and turn lights and Accessory off.
6. Upon detection of valid engine monitor or completion of timed starter output, or low to high transition of vacuum signal (depending on which is programmed), disengage starter and turn on lights and Accessory.
7. MINIMUM STARTER CRANK TIME = $\frac{1}{2}$ SECOND
8. MAXIMUM STARTER CRANK TIME = 8 SECONDS!
9. 2 seconds after successful start, lock doors (*(Programmable)*).
10. Allow vehicle to run for 10, 20 or 40 minutes (*Programmable*)
11. Abort remote start without further automatic attempts upon expiration of run time, $\frac{1}{2}$ second brake press, loss of engine monitor or Tx button #3 press.
13. Leave Kill/Anti-Grind output on after Remote Start abort if valid tach pulses still present *from Ignition key*.

Diesel Input

If diesel input active, suspend starter output until inactive. Maximum hold time of 45 seconds. If diesel input still active after 45 seconds, abort remote start.

Idle-down

If started with Ignition key, pressing the remote start transmitter button allows key to be removed while engine continues to run. Except for no starter activation, this mode is identical to remote start mode after successful start. Pulse driver's door unlock when *brake released from depressed position* after engaging idle-down (if option 3 enabled). Reset motor with 1/2 second active brake pedal or Tx request. Run time should match programmed run time for Remote Start.

Infinity mode

Engage idle-down mode and within 4 seconds activate remote start Tx button a second time. Parking lights flash continuously. Engine will run indefinitely. After 10 minutes, parking lights stay on solid until remote start aborted (brake pedal activation, Tx request or loss of engine monitor).

Self-Start Mode

Engage remote start with Tx button #3. Continue holding button down 4 seconds until parking lights flash. Within 10 seconds, press Tx button 1 from 1 to 4 times. Parking lights will pause with each press. After 10 second programming period expires, lights will flash same number of times Tx button 1 was pressed, confirming vehicle will start by itself every 1 to 4 hours. If 10 second programming period is exceeded without receiving signal from Tx button #1, vehicle will start as normal and no timed start feature will have been programmed. Run time is 10, 20 or 40 minutes as programmed.

Remote Start Abort/Reset

- Abort instantly w/transmitter request
- Reset 1 sec. after engine monitor loss (Re-attempt 2 X)

Hood Safety

If hood open when engaging remote start, pulse lights and siren 3 times and abort remote start and re-attempts until requested with Tx.

Brake Reset

- Abort remote start w/o further automatic attempts if brake pressed for 1/2 second.
- If brake on when engaging remote start, pulse lights and siren 4 times and do not remote start.

Tach Mode

When programmed for tach mode, the tach wire is connected to the ignition coil's negative terminal or to another source of pulses indicating the vehicle is running (such as the vehicle's ECM or PCM modules). The starter will crank until the tach wire indicates a value with reference to the programmed RPM that assumes the vehicle is running. The starter turns off at this point. The tach pulses are monitored continually to determine if the vehicle's engine has stopped. If so, abort remote start and attempt two more times.

Timed Crank Mode

In this mode, the starter is engaged for a pre-programmed period of time (default = 0.75 seconds). The tach input starts monitoring 1 second after starter disengages and is looking for pulses that represent a "vehicle running" condition. "Vehicle running" is assumed when 2 or more pulses are present within a 1 second period. If less than 2 pulses are detected at any time, abort remote start and attempt Remote Start 2 more times.

Vacuum Mode

When programmed for vacuum mode, the tach wire is connected to a vacuum switch which shows ground when the engine is not running. Upon remote start, if tach wire is at ground activate starter until the tach wire goes high (maximum crank = 8 seconds).

Auxiliary Output (Trunk Pop)

Pressing and holding Tx button #4 for ½ second activates trunk pop output which stays on as long as the button is held down.

Programming

Learning Transmitter Code

With ignition on and hood opened, press program button 4 times within 5 seconds.

Lights flash 4 times to confirm Tx program mode engaged.

Press button #1 of up to 4 transmitters during this program period to learn codes.

Lights flash 2 times whenever a code is learned.

Program mode aborts after 30 seconds or when ignition is turned off.

Changing Program Options

1. Turn Ignition on and open hood.
2. Press program button 5 times within 5 seconds.
3. Lights flash 5 times to confirm system in program mode.
4. Press program btn. 1-7 times within 10 seconds to select option from list.
5. Lights confirm selected option by flashing the same amount of times that the program button was pressed.
6. Select option value by either pressing one of the Transmitter buttons or by pressing the brake pedal as indicated below.

Selecting with Transmitter

Button 1 = Change to new option value (confirm w/1 light flash).

Button 2 = Go back to default option value (confirm w/2 light flashes).

Buttons 3 and 4 are only used to select option values with options 1 and 4.

Option 1: Tx btn. 1= 10 min. (1 light flash), Tx btn. 2= 20 min. (2 light flashes),
Tx btn. 3= 40 minutes (3 light flashes).

Option 4: Tx btn. 1= .75 Seconds. (1 light flash), Tx btn. 2= 1.0 Seconds (2 light flashes), Tx btn. 3= 1.25 Seconds (3 light flashes) Tx btn. 4= 1.5 Seconds (4 light flashes).

Selecting with Brake Pedal

Toggle between option values with each press of brake pedal. When selecting Options 1 or 4 each press of the brake increments to the next value. Confirmation light flashes are the same as above.

Example: Change option #4 from default (.75 Seconds) to 1.50 Seconds...

1. Open hood and turn ignition on.
2. Press override/program button 5 times within 5 seconds.
3. Lights flash 5 times (system now in program mode).
4. Press override/program button 4 times (for option #4) within 5 seconds. Lights flash 4 times to confirm option #4 was selected.

If program with Transmitter, press button #4. Lights flash 4 times and programming is complete.

If programming with brake pedal:

- a. Press brake pedal one time.
- b. Lights flash 2 times (crank time now set for 1.0 second).
- c. Press brake pedal again.
- d. Lights flash 3 times and crank time is set for 1.25 seconds.
- e. Press brake pedal again.
- f. Lights flash 4 times and crank time is set for 1.50 seconds.
- g. Turn ignition off or wait 30 seconds without pressing program button to end program mode (lights will flash 5 times).

Option 8: Tx btn. 1 or 1st brake pedal press ≠ Current Option Settings
Tx btn. 2 or 2nd press of brake pedal ≠ Default Options

Abort program mode when Ignition turned off.

Option #	Feature (button1)	Default (button2)
1.	Ignition Lock/Unlock	On
2.	.75 or 3.5 seconds Lock/Unlock	.75 Sec
3.	Double Door Unlock Pulse	Off
4.	Learning TACH	-----
5.	10/20/20/40 minute run time (button 1-4)	20Min
6.	Option Reset	-----

Power Down Memory

The Following items must be remembered when power is removed and re-connected to the system:

- ♦ All Option programming
- ♦ TACH reference

How TO Program To Learning TACH (From Tachometer)

1. Turn ignition on by key, start the car and wait until into idling.
2. Open hood.
3. press program button 5 times within 5 seconds & light flash 5 times to confirm.
4. Press program button 4 times within 10 seconds.
5. Press button 1 of TX or Press pedal break as indicated below, Now the TACH of the car were learned into the system.

Notice: The Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC ID.: CHX433TX

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.
OPERATIONS IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE AND
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED.
INCLUDING INTERFERENCE THAT MAY CAUSE UNDESRIED OPERATION.