

STALKER

DSR 2X



OPERATOR MANUAL

Stalker DSR 2X

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STALKER 2X

Quick Start Guide

For a more detailed explanation of the DSR 2X's operation, please refer to the online owners manual, part #011-0117-10. Download at <https://www.stalkerradar.com/dsr-2x>

Powering the unit on

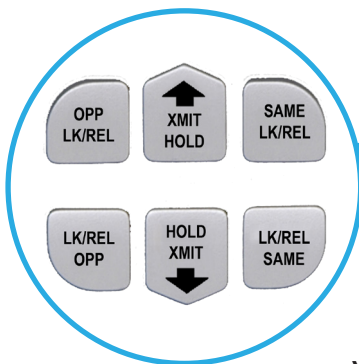
The 2X is powered on by pressing the **PWR** button located on the left side of the display.



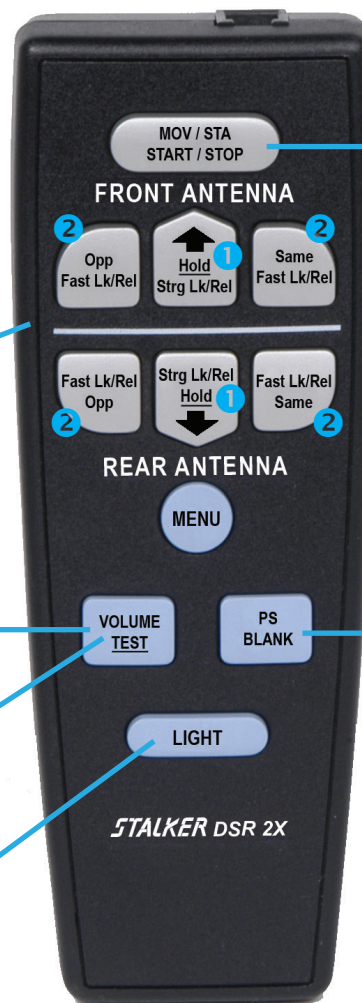
Remote Controls

The 2X has 2 compatible remote controls - Fast Lock (shown) and Instant-On (below). The only difference is the function of the central key group. All other keys are identical.

Instant-On Remote Control Keys



Fast-Lock Remote Control



MOV/STA

Toggles between moving and stationary modes when not connected to VSS.

1 Hold Strg Lk/Rel

Alternates between strongest target lock/release and Hold functions. (Press and hold for underlined function.)

2 Fast Lk/Rel Opp or Same

Alternates between Fast target lock and directional functions.

PS BLANK

Blanks patrol speed after target speed and patrol speed are locked. Also reacquires patrol speed when lost.

VOLUME
Adjusts volume

TEST

Initiates diagnostic self-test. (Press and hold for underlined function.)

LIGHT

Activates remote back light and changes display brightness.

***For Instant-On Remote functions see pages 16-18**

Stalker DSR 2X Quick Start Guide, cont.

Stationary Mode

NOTE

When using VSS, the 2X will automatically switch between Moving and Stationary Modes.



Figure 1

Perform the internal tests prior to using the 2X for enforcement.

MOV / STA
START / STOP

If VSS is not engaged, Select Stationary Mode, by pressing the **MOV/STA** button, then select one of 3 Stationary Modes using the **Front Opp** (closing vehicles), **Front Same** (away vehicles) or both Opp and Same.

Front Zone buttons will select the antenna (Front), mode (Opposite or Same) and activate the selected antenna.

Opp
Fast Lk/Rel

For Front Opposite, press the upper left **Front Opp** button.

Same
Fast Lk/Rel

For Front Same, press the upper right **Front Same** button.

To operate the rear antenna:

Fast Lk/Rel
Opp

Fast Lk/Rel
Same

Press the lower left **Rear Opp** or the lower right **Rear Same** button. The 2X allows both front and rear antennas to be active at the same time.

Hold
Strg Lk/Rel

Strg Lk/Rel
Hold

Press and hold the **Front** or **Rear HOLD** button to turn off the front or rear antenna.

Locked Target Enunciators

Immediately after locking a target speed, a 3-word voice enunciator will announce the active antenna, mode and direction. Example: "FRONT, STATIONARY, CLOSING".

VSS Automates Switching Between Modes

When connected to the patrol vehicle VSS (Vehicle Speed Sensor) will automatically switch between Stationary and Moving Modes. The **MOV/STA** switch is non-functioning unless in **TEST** mode.

Opposite Moving Mode

When using VSS, the 2X will automatically switch between Moving and Stationary Modes. If VSS is not used, press the **MOV/STA** button to change between moving and stationary mode, select the upper left **Front Opp** button. The 2X will display closing vehicles with the front antenna. For the rear antenna, press the lower left **Rear Opp** button.



Figure 2



Figure 3

Stalker DSR 2X Quick Start Guide, cont.

Same-Direction Moving Mode



Select Same Direction by pressing the upper right **Front Same** button. For the rear antenna, press the lower right **Rear Same** button.

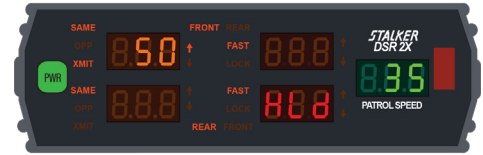


Figure 4

Audio Adjustment



To adjust Doppler audio levels, press the **VOLUME** button to display **Aud**, then use the **Up** and **Down** arrows to adjust.

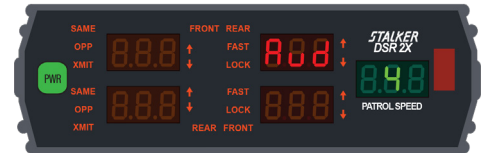


Figure 5



To adjust the Beep level, press the **VOLUME** button twice to display **bEEP**, then use the **Up** and **Down** arrows to adjust.

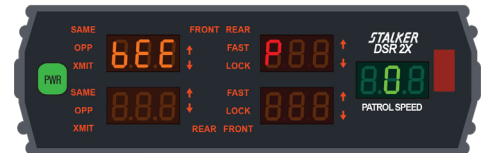


Figure 6



To adjust the lock enunciation voice level, press the **VOLUME** button three times to display **VOICE**, then use the **Up** and **Down** arrows to adjust.

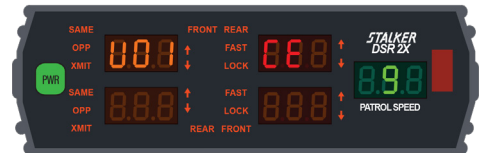


Figure 7

Tuning Fork Testing

These tests are based on using 25 mph and 40 mph tuning forks.



Using the remote, press and hold the **TEST** button to activate **SELF-TEST**. After the internal test shows PASS, two decimal points will appear indicating Tuning Fork Mode is active for 5 minutes.

Press **HOLD** to terminate **SELF-TEST**.

IMPORTANT NOTE
Our radar systems are self-testing, and unless required by state statute or department policy, Applied Concepts, Inc., Stalker Radar, does not recommend a mechanical or electronic tuning fork test.



Figure 8

Stalker DSR 2X Quick Start Guide, cont.

Stationary

MOV / STA
START / STOP

Using the **MOV/STA** remote button, set for Stationary Mode. Strike the lowest speed tuning fork and place in front of active antenna.

Target reading should match speed on the fork.



Figure 9

Moving Opposite

MOV / STA
START / STOP

Using the **MOV/STA** remote button, set for Moving Mode. Use front **Opp** button set for Opposite Direction.

Opp
Fast Lk/Rel

Strike the lowest speed tuning fork and place in front of active antenna. Patrol Window will show speed stamped on the fork. Strike the highest speed tuning fork and hold in front of the antenna along with the lowest speed fork.

Target Window will show the difference in speed, typically, 25 Patrol, 15 Target.

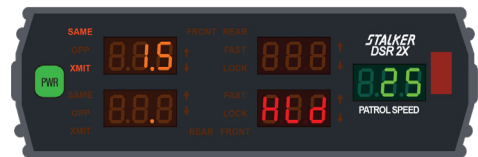


Figure 10

Moving Same

Same
Fast Lk/Rel

Using the front **SAME** remote button, set for Same Mode.

Strike the highest speed tuning fork and place in front of active antenna. Patrol Window will show speed stamped on fork.

Strike the lowest speed fork and hold in front of the active antenna along with the highest speed fork.

Typical 40 Patrol, 65 Target.

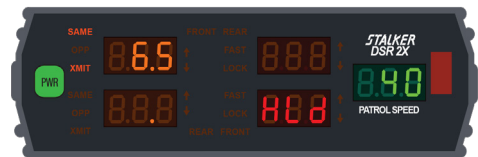


Figure 11

Fast Lk/Rel
Opp

Fast Lk/Rel
Same

To test the rear antenna, press **Rear Opp** or **Rear Same** button and repeat steps above.

Hold
Strg Lk/Rel

To return to normal radar mode, press and hold the front **HOLD** button.



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011-1204-00 Rev D



800-STALKER

Contents

Section 1 - Operating the Stalker 2X	10
1.1 Display Front Panel	10
1.2 Icon Indicator Definition	11
1.3 Arrow Indicator Definition	12
1.4 Display Messages	12
Section 2 - Fast Lock Remote Control Usage	13
2.1 Remote Control Keys	13
Section 3 - Instant-On Remote Control Usage	16
3.1 Remote Control Keys	16
Section 4 - Setting Up the Stalker 2X	19
4.1 Operator Menu	19
4.2 Faster Target Display On/Off	20
4.3 Opposite-Direction Sensitivity (Range) Adjustment	20
4.4 Same-Direction Sensitivity (Range) Adjustment	20
4.5 Audio Squelch ON/OFF	20
4.6 Low-End Patrol Speed Selection	20
4.7 Patrol Speed Shadowing	21
4.8 Rear Traffic Alert Speed Selection	21
4.9 Antenna Selection	21
Section 5 - About Target Zones	22
5.1 Setting the Four Target Zones	22
5.2 Hold Mode	23
Section 6 - Selecting Target Zones	24
6.1 Stationary Target Zones Settings	24
6.2 Dual Zone Mode	24
6.3 Moving Target Zones Settings	25
Section 7 - Other Settings	26
7.1 Doppler Audio	26
7.2 Beep Tones	26
7.4 Patrol Speed Blanking	27
7.5 Software Version	27
7.6 Transmitter Frequency	27
7.7 Display Lighting	27
Section 8 - Rear Traffic Alert	29
Section 9 - Testing the 2X	30
9.1 Power-On Self-Test	30
9.2 Internal Circuit Test	30
9.3 Automatic Self-Test	31
9.4 Optional Patrol Speed Test	31

9.5 Interference From Other Transmitters	31
9.6 Low Supply Voltage	31
Section 10 - Tuning Fork Testing	32
10.1 Stationary Mode Tuning Fork Test	32
10.2 Opposite-Direction Moving Mode Tuning Fork Test	33
10.3 Same-Direction Moving Mode Tuning Fork Test	34
Section 11 - Troubleshooting	35
11.1 Interference Sources and Remedies	36
11.2 Patrol Vehicle HVAC Fan Speed Interference	36
11.3 Reducing HVAC Fan Motor Speed Signals	36
11.4 Fan Speed Suppression System	37
11.5 Interference From Other Transmitters	37
11.6 Power Supply	37
11.7 No Power	38
Section 12 - Installation	39
12.1 2X Mounting Options	40
12.2 FCC RF Compliance	40
12.3 Required Maintenance	40
Section 13 - The Perfect Patrol Speed with VSS	41
13.1 The VSS Speedometer Signal	41
13.2 VSS Options	41
13.3 Automatic VSS Calibration	41
13.4 Speed Module	41
13.5 Moving Mode Operation	42
13.6 First-Time Calibration (or Installing the Radar in a New Vehicle)	42
13.7 Automatic Moving / Stationary Selection	42
13.8 Patrol Speed Low Cutoff	42
Section 14 - Legal	43
14.1 FCC Requirements	43
14.2 Case Law	43
Section 15 - Radar Care	43
Section 16 - Warranty	44

Section 1 - Operating the Stalker 2X

1.1 Display Front Panel

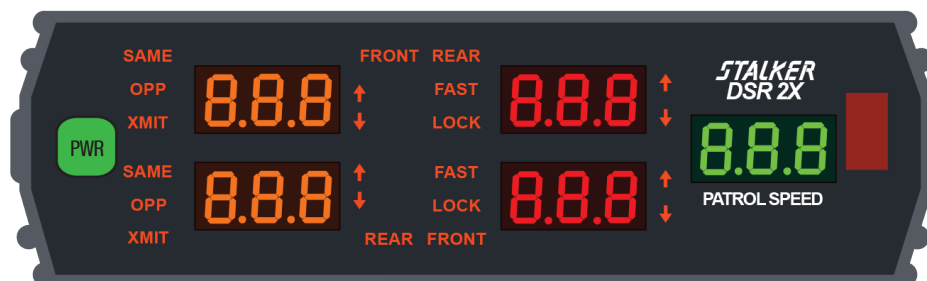


Figure 1

The 2X display unit presents the radar operator with a clear and logically organized picture of how the unit is operating and the targets that it is tracking. The operator knows at a glance the speed of the target, its direction of travel, and its position relative to the patrol car. Display brightness can be set to “auto” or can be manually adjusted to compensate for ambient conditions. Other features include:

PWR:

The **PWR** switch is the main On/Off power switch. The 2X has a jumper in its power-supply circuit that selects one of the two following options:

1. When vehicle power is applied, the unit must be turned on or off by pressing the **PWR** switch. This is the normal factory setting.
2. When vehicle power is applied, the unit always powers on automatically, but may be turned off by pressing the **PWR** switch. If this setting is desired, contact the factory.

TARGET WINDOWS:

The two left, (**AMBER**) three-digit windows are the Target Windows. The top window displays the speed of the strongest target entering the front radar beam, while the bottom window displays the speed of the strongest target entering the rear radar beam. While in Stationary Mode, both same direction and opposite direction targets can be monitored simultaneously for both front and rear antennas. The four target areas are known as Target Zones. When a strong target is displayed in either Target Window, an arrow icon located to the right of the window indicates the target's direction of travel relative to the patrol vehicle. In Moving Mode, two Target Zones can be monitored, one front and one rear.

MIDDLE WINDOW:

The two middle, (**RED**) three-digit windows are dual purpose windows. First, they are used for locking the strongest target shown in the corresponding left window. While not containing a “locked” speed, the middle windows are used to display the fastest target in the radar beams. The **LOCK** and **FAST** icons are used to indicate the current status of the window. The middle windows are used to store target speeds that the operator chooses to “lock” using the appropriate front or rear **LOCK** key. The presence of the **LOCK** icon indicates that the middle window contains a “locked” target speed. Every speed lock will be followed immediately by a 3-word voice enunciator that indicates antenna/radar mode/direction.

Example: FRONT/STATIONARY/CLOSING or FRONT/STATIONARY/AWAY.

Only one target speed can be locked from each antenna.

PATROL WINDOW:

The right, (**GREEN**) three-digit window is the patrol speed window. In Moving Mode, the operator should always verify that the patrol window is tracking the patrol vehicle's speedometer. After locking a target speed, the patrol window may be "blanked" by pressing the **PS BLANK** key. Restore the patrol speed by pressing the **PS BLANK** key a second time. Read the **PS BLANK** key section for more information.

1.2 Icon Indicator Definition

XMIT:

The **XMIT** icon indicates that the associated antenna is transmitting and receiving. When **XMIT** is turned off, (Hold) **HLD** will be displayed in the Lock Window for that antenna unless that antenna has a locked target.

FRONT:

The **FRONT** icon indicates the front antenna is selected for use. The icon will light with a steady indication if the antenna is operational, or a blinking indication if the antenna is missing or inoperative.

OPP:

The **OPP** icon is a Target Zone indicator. In both Stationary and Moving Mode, the **OPP** icon indicates that the associated antenna is monitoring targets in the opposite direction. While in Stationary Mode, having both the **OPP** icon and the **SAME** icon simultaneously illuminated indicates that OPP/SAME Stationary Mode is selected and both Target Zones are being monitored.

SAME:

The **SAME** icon is a Target Zone indicator. For both stationary and Moving Mode, the **SAME** icon indicates that the associated antenna is monitoring targets in the same direction. While in Stationary Mode, having both the **OPP** icon and the **SAME** icon simultaneously illuminated indicates that OPP/SAME Stationary Mode is selected and both Target Zones are being monitored.

LOCK:

A **LOCK** icon indicates that the operator has locked a target speed in the associated Lock Window. Every speed lock will be followed immediately by a 3-word voice enunciator that indicates antenna, radar mode, direction. **FAST** and **LOCK** displayed simultaneously indicates that the operator has locked a fast target in the associated Lock Window.

FAST:

A **FAST** icon indicates that the associated Fast Window will display a highest speed vehicle if one is found. **FAST** and **LOCK** displayed simultaneously indicates a lock of a fast target.

↑ or ↓:

A red ↑ or ↓ shown to the right of any of the speed windows indicates the direction of travel (for the moving or stationary target displayed in that window. Every strong target or fast

NOTE

FAST FUNCTION CAN BE TURNED ON/OFF IN THE "OPERATOR MENU".

target displayed (either moving or stationary) in one of the four speed windows, will have a direction arrow associated with it. The direction of the ↑ is defined by the table below.

1.3 Arrow Indicator Definition

SPEED ZONE	DIRECTION	ARROW
FRONT OPPOSITE	CLOSING	↓
FRONT SAME	AWAY	↑
FRONT SAME	CLOSING	↓
REAR OPPOSITE	AWAY	↓
REAR SAME	CLOSING	↑
REAR SAME	AWAY	↓

1.4 Display Messages

HLd:

The **HLd** message display in one of the middle windows indicates that the transmitter for that antenna is in hold mode or turned off.

U Lo:

U Lo is displayed in the Target window when the input voltage falls below approximately 8 volts. Operation is inhibited, but normal operation will resume automatically when the input voltage is restored to a normal voltage (>9.0 volts).

rFi:

The **rFI** message indicates the presence of an interfering RFI signal. Operation is inhibited during an **rFI** indication.

PAS S:

PAS S is displayed at the end of a successful internal test cycle along with a "happy tone."

FAI L:

A **FAI L** message (along with fail tone) indicates that a circuit malfunction has been detected. Speed readings are inhibited, and the unit should be removed from service and repaired. **FAI L** will remain in the message window until reset by being powered off.

Hot:

The **Hot** message is used to indicate that the counting unit is outside of its rated temperature range. After the counting unit cools down, it will automatically begin normal operations.

Section 2 - Fast Lock Remote Control Usage

2.1 Remote Control Keys

Several of the keys have dual functions. An underlined word on a key indicates that the key must be held down until two beeps are heard for that function to operate. All keys with underlined words operate with a delay time and will beep two times. The first beep occurs when the key is initially pressed and the second beep occurs when the key actuation delay time expires.

MOV/STA:

The **MOV/STA** key toggles between Moving and Stationary Modes. A speed or brackets [] in the patrol window indicates Moving Mode, while a blank patrol window indicates Stationary Mode. With a VSS cable installed, the radar will automatically switch between Moving and Stationary Modes based on the presence (or absence) of VSS pulses and brackets [] will not be seen in the patrol window. (See page 40 for more information on VSS.)

After selecting Moving Mode or Stationary Mode, the operator can use the four zone keys (described below) to select the Target Zones to monitor targets on both antennas simultaneously. The **SAME** and **OPP** icons display the zone selection in both moving and Stationary Modes. Each antenna is totally independent of the other relative to Target Zone selection. The Stationary Modes (and associated icons) for the front antenna are: stationary closing (**OPP**), stationary away (**SAME**), and stationary bi-directional (**OPP/SAME**). The Stationary Modes for the rear antenna are: stationary closing (**SAME**), stationary away (**OPP**), and stationary bi-directional (**OPP/SAME**).

Opp | Fast Lk/Rel:

FOR STATIONARY MODE - The **Opp | Fast Lk/Rel** key is a two (2) function key:

1. Press the **Opp** key to turn-on the corresponding transmitter (if it is in hold) and directly select the Opposite direction target zone for the associated antenna.
2. Once the Opposite direction target zone is selected, the **Opp | Fast Lk/Rel** key now becomes a **Lock/Release** key. While a faster target is displayed in the corresponding Fast Window, press the **Fast Lk/Rel** key to lock the faster speed in the Fast Window. Press again to release.

FOR MOVING MODE - The **Opp | Fast Lk/Rel** key is a two (2) function key:

1. Press the **Opp** key to turn-on the corresponding transmitter (if it is in hold) and directly select the Opposite direction target zone for the associated antenna.
2. Once the Opposite direction target zone is selected, the **Opp | Fast Lk/Rel** key now becomes a **Lock/Release** key. While a faster target is displayed in the corresponding Fast



Part #200-0919-00

Window, press the **Fast Lk/Rel** key to lock the faster speed in the Fast Window. Press again to release. Patrol speed will also be locked and stored internally until the patrol vehicle is stopped. Then the locked patrol speed will be displayed in the Patrol window.

Hold | Strg Lk/Rel:

The **Hold | Strg Lk/Rel** key is a two (2) function key:

1. Press and hold the **Hold** key to place the associated antenna (both zones for that antenna) in hold (standby) mode. **HLd** (unless that antenna has a locked target) will be displayed in the Lock Window (for that antenna) and all mode icons associated with that antenna, will stay on except the **XMIT** icon will turn off. To exit **Hold** mode, momentarily press the **Hold** key again.
2. Press the **Strg Lk/Rel** key to LOCK a strong speed or to RELEASE a locked speed for the associated antenna. Patrol speed will also be locked and stored internally until the patrol vehicle is stopped. Then the locked patrol speed will be displayed in the Patrol window.
3. While in Dual Zone mode, to lock the Strong speed target, use the upper **Strong Lock/Rel** key to lock the speed in the upper window and the lower **Strong Lock/Rel** key to lock the speed in the lower window.

↑ or ↓:

The ↑ key and the ↓ key (located on the **Hold | Strg Lk/Rel** keys) are used with the **MENU** key to select options from the Operator Menu and the Option Menu.

Same | Fast Lk Rel:

FOR STATIONARY MODE - The **Same | Fast Lk/Rel** key is a two (2) function key:

Press the **Same** key to turn-on the corresponding transmitter (if it is in hold) and directly select the Same direction target zone for the associated antenna.

Once the Same direction target zone is selected, the **Same | Fast Lk/Rel** key now becomes a **Lock/Release** key. While a faster target is displayed in the corresponding Fast Window, press the **Fast Lk/Rel** key to lock the faster speed in the Fast Window. Press again to release.

FOR MOVING MODE - The **Same | Fast Lk/Rel** key is a two (2) function key:

Press the **Same** key to turn-on the corresponding transmitter (if it is in hold), and directly select the Same direction target zone for the associated antenna.

Once the Same direction target zone is selected, the **Same | Fast Lk/Rel** key now becomes a **Lock/Release** key. While a faster target is displayed in the corresponding Fast Window, press the **Fast Lk/Rel** key to lock the faster speed in the Fast Window. Press again to release. Patrol speed will also be locked and stored internally until the patrol vehicle is stopped. Then the locked patrol speed will be displayed in the Patrol window.

MENU:

The **MENU** key is a two (2) function key:

Pressing and releasing the **MENU** key enters the Operator Menu system (See page 18) allowing the ↑ and ↓ keys to select options from the menu system. Exit the menu system by pressing any zone key (**OPP** or **SAME**).

Pressing and holding the **MENU** key turns Dual Zone operation on. This condition is confirmed

by the **SAME**, **OPP**, **FRONT**, and **REAR** icons along with **SEL** (in the right window) blinking . Two zone keys are then selected, one after the other. The radar will then be ready to monitor traffic speeds. Press any other zone key to turn Dual Zone operation off.

VOLUME/TEST:

The **VOLUME/TEST** key is a two (2) function key:

The **VOLUME** key is used with the **↑** and **↓** keys to adjust the Doppler volume (**Aud**), the Beep volume, and the Voice volume. The first press of the **VOLUME** key will display **Aud** (0 through 9), the second press will display **bEE P** (0 through 9), and the third press will display **UOI CE** (0 through 9). The **↑** and **↓** keys are used to increase or decrease the volume of each sound. For each attribute, 0 is off and 9 is maximum volume. Two different **Aud** levels can be set – one associated with the Moving Mode and the other associated with the Stationary Mode. The levels are set when the radar is in the appropriate mode. When VSS is enabled, the radar will automatically switch between moving **Aud** level and stationary **Aud** level when it switches between modes. The **bEE P** and **UOI CE** volume levels remain the same in both stationary and Moving Modes.

Press and hold the **TEST** key to perform a diagnostic check on the display/counting unit and antenna. The display/counting unit will complete a processor check, memory check, and crystal check, followed by counting unit temperature display and input voltage display, followed by the display of speeds of **10**, **35**, and **65**. A comprehensive test is also performed on each antenna by the counting unit to ensure the integrity of the antenna cable and antenna electronics. **PAS S** or **FAI L** (with tone) is indicated on the display unit after the completion of each antenna test.

PS BLANK:

The **PS BLANK** key is a two (2) function key:

While a target speed is locked (Moving Mode) the **PS BLANK** key can be used to toggle between showing the locked patrol speed or a blank patrol speed window. In addition, with no locked speeds, if the patrol window indicates an incorrect patrol speed, the **PS BLANK** key can be used to blank the patrol speed window and acquire a new patrol speed. When a VSS cable is installed, this function is not needed and just beeps.

LIGHT:

The **LIGHT** key is a three (3) function button. A single press of the **LIGHT** key activates the remote-control back light for six (6) seconds. Two successive presses of the **LIGHT** key toggle the display brightness intensity through six light levels, ranging from **bri 1** (low) to **bri 6** (high). The **bri A** position indicates the brightness of the display will adjust automatically. The auto brightness function uses the front panel light sensor to select either full brightness for day operation or reduced brightness for night operation. Pressing and holding the **LIGHT** key for at least 1.5 seconds brings up the **Fan Suppression menu**. Once in the Fan Suppression menu, another quick press of the **LIGHT** key will toggle the Fan Suppression system On and Off.

Section 3 - Instant-On Remote Control Usage

(Does not allow locking fastest target.)

3.1 Remote Control Keys

Several of the keys have dual functions. An underlined word on a key indicates that the key must be held down until two beeps are heard for that function to operate. All keys with underlined words operate with a delay time and will beep two times. The first beep occurs when the key is initially pressed and the second beep occurs when the key actuation delay time expires.

MOV/STA:

The **MOV/STA** key toggles between moving and Stationary Modes. A speed or brackets [] in the patrol window indicates Moving Mode, while a blank patrol window indicates Stationary Mode. With a VSS cable installed, the radar will automatically switch between moving and Stationary Modes based on the presence (or absence) of VSS pulses and brackets [] will not be seen in the patrol window. (See page 40 for more information on VSS.)

After selecting Moving Mode or Stationary Mode, the operator can use the four zone keys (described below) to select the Target Zones to monitor targets on the front antenna and the rear antenna simultaneously. The **SAME** and **OPP** icons display the zone selection in both moving and Stationary Modes. Each antenna is totally independent of the other relative to Target Zone selection. The Stationary Modes (and associated icons) for the front antenna are: stationary closing (**OPP**), stationary away (**SAME**), and stationary bi-directional (**OPP/SAME**). The Stationary Modes for the rear antenna are: stationary closing (**SAME**), stationary away (**OPP**), and stationary bi-directional (**OPP/SAME**).

Opp | Lk/Rel:

FOR STATIONARY MODE - The **Opp | Lk/Rel** key is a two (2) function key:

1. Press the **OPP** key to turn-on the corresponding transmitter (if it is in hold) and directly select the Opposite direction speed zone for the associated antenna.
2. Once the Opposite direction speed zone is selected, the **OPP | LK/REL** key now becomes a Lock/Release key. While a strong target is displayed in the corresponding Target Window, press the **LK/REL** key to lock the strong speed in the Fast Window. Press again to release.

FOR MOVING MODE - The **OPP | LK/REL** key is a two (2) function key:

1. Press the **OPP** key to turn-on the corresponding transmitter (if it is in hold) and directly select the opposite direction speed zone for the associated antenna.
2. Once the Opposite direction speed zone is selected, the **OPP | LK/REL** key now becomes a



Part #200-0919-00

Lock/Release key. While a strong target is displayed in the corresponding Target Window, press the **LK/REL** key to lock the strong speed in the Fast Window. Press again to release. Patrol speed will also be locked and stored internally until the patrol vehicle is stopped. Then the locked patrol speed will be displayed in the Patrol window.

XMIT | HOLD:

The **XMIT | HOLD** key is used to place the associated antenna in transmit mode or hold (standby) mode. The **XMIT** icon will toggle (On/OFF) to indicate either transmit mode or hold mode. During hold mode, **Hld** will be displayed in the Lock Window (for that antenna) and along with all currently selected mode icons and arrows associated with that antenna (unless that Lock Window contains a locked target).

↑ or ↓:

The **↑** key and the **↓** key (located on the **XMIT/HOLD** keys) are used with the **MENU** key to select options from the Operator Menu and the Option Menu.

SAME | Lk/Rel:

FOR STATIONARY MODE - The **SAME | Lk/Rel** key is a two (2) function key:

Press the **SAME** key to turn-on the corresponding transmitter (if it is in hold) and directly select the Same direction speed zone for the associated antenna.

Once the Same direction speed zone is selected, the **SAME | Lk/Rel** key now becomes a Lock/Release key. While a strong target is displayed in the corresponding Target Window, press the **Lk/Rel** key to lock the strong speed in the Fast Window. Press again to release.

FOR MOVING MODE - The **SAME | Lk/Rel** key is a two (2) function key:

Press the **SAME** key to turn-on the corresponding transmitter (if it is in hold) and directly select the Same direction speed zone for the associated antenna.

Once the Same direction speed zone is selected, the **SAME | Lk/Rel** key now becomes a Lock/Release key. While a strong target is displayed in the corresponding Target Window, press the **LK/REL** key to lock the strong speed in the Fast Window. Press again to release. Patrol speed will also be locked and stored internally until the patrol vehicle is stopped. Then the locked patrol speed will be displayed in the Patrol window.

MENU:

The **MENU** key is a two (2) function key:

Pressing and releasing the **MENU** key enters the Operator Menu system (See *page 18*) allowing the **↑** and **↓** keys to select options from the menu system. Exit the menu system by pressing any zone key (**OPP** or **SAME**).

Pressing and holding the **MENU** key turns Dual Zone operation on. This condition is confirmed by the **SAME, OPP, FRONT, and REAR** icons and **SEL** (in the right window) blinking. Two zone keys are then selected, one after the other. The radar will then be ready to monitor traffic speeds. Press any other zone key to turn Dual Zone operation off.

VOLUME/TEST:

The **VOLUME/TEST** key is a two function key:

The **VOLUME** key is used with the **↑** and **↓** keys to adjust the Doppler volume (**Aud**), the Beep volume, and the Voice volume. The first press of the **VOLUME** key will display **Aud (0 through 9)**, the second press will display **bEE P (0 through 9)**, and the third press will display **UOI CE (0 through 9)**. The **↑** and **↓** keys are used to increase or decrease the volume of each sound. For each attribute, **0** is off and **9** is maximum volume. Two different **Aud** levels can be set – one associated with the Moving Mode and the other associated with the Stationary Mode. The levels are set when the radar is in the appropriate mode. When VSS is enabled, the radar will automatically switch between moving **Aud** level and stationary **Aud** level when it switches between modes. The **bEE P** and **UOI CE** volume levels remain the same in both stationary and Moving Modes.

Press and hold the **TEST** key to perform a diagnostic check on the display/counting unit and antenna. The display/counting unit will complete a processor check, memory check, and crystal check, followed by counting unit temperature display and input voltage display, followed by the display of speeds of **10, 35, and 65**. A comprehensive test is also performed on each antenna by the counting unit to ensure the integrity of the antenna cable and antenna electronics. **PAS S** or **FAI L** (with tone) is indicated on the display unit after the completion of each antenna test.

PS BLANK:

The **PS BLANK** key is a two (2) function key:

While a target speed is locked (Moving Mode) the **PS BLANK** key can be used to toggle between showing the locked patrol speed or a blank patrol speed window.

In addition, with no locked speeds, if the patrol window indicates an incorrect patrol speed, the **PS BLANK** key can be used to blank the patrol speed window and acquire a new patrol speed. When a VSS cable is installed, this function is not needed and just beeps.

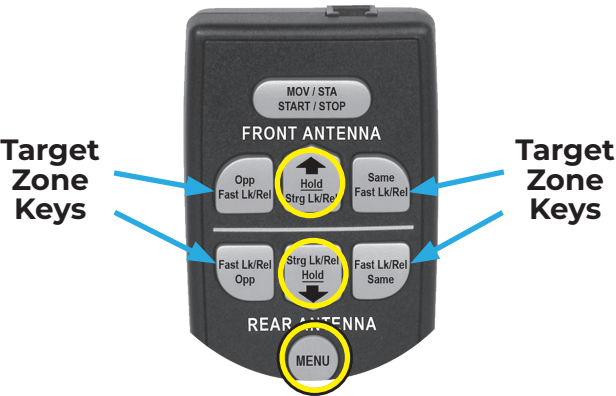
LIGHT:

This is a two (2) function key. With a single depression, the **LIGHT** key activates the remote control back light for six (6) seconds. Additional depressions of the **LIGHT** key toggle the display intensity through six levels of brightness, ranging from **bri 1** (low) to **bri 6** (high) and the **bri A** (automatic) position. The auto brightness function is selected with the **bri A** position and uses the front panel light sensor to select either full brightness for day operation or reduced brightness for night operation.

Section 4 - Setting Up the Stalker 2X

4.1 Operator Menu

The 2X features an Operator Menu for access to certain controls and uses the remote control to enter this Operator Menu to select options. Pressing the MENU key once enters the Operator Menu and displays the first option. Subsequent pressings of the MENU key will step through the other options. The **↑** and **↓** keys are used to change the setting of each option.



MENU OPERATION ON the 2X – Set up of the radar unit is fast and easy. It is accomplished using the remote control. Press the **MENU** key to step through the settings and press the **↑** or **↓** keys to change the value. To exit the menu, press any of the four Target Zone keys.

		FEATURE Step down by pressing MENU key	SETTINGS Change using the ↑ or ↓ keys
Menu Step ORDER	Description	LOCK/FAST WINDOW	Patrol Window (bold indicates factory default)
1 (only displayed if Faster Enable is on)	Faster On/Off	FAS	On , OFF
2	Opposite Sensitivity	OP SEN	0, 1, 2, 3, 4
3	Same Direction Sensitivity	SL SEN	0, 1, 2, 3, 4
4	Squelch	SQ L	On , OFF
5	Patrol Speed Low cutoff	PAT	L05, L010, L20
6 (only displayed if Traffic Alert is ON)	Alert Closing Speed	ALC rt	1-200, default is 30
7	Number of Antennas	Ant	1 , 2

4.2 Faster Target Display On/Off

Pressing the **MENU** key once initiates the first option in the Operator Menu, turning Faster Target Display On or OFF. (Figure 14) The $\uparrow$ and $\downarrow$ keys switch between On and OFF. Press any of the four Target Zone Keys to exit the Menu.

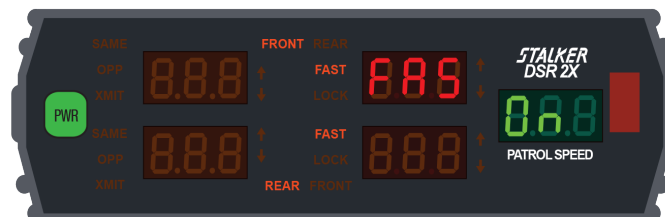


Figure 3

4.3 Opposite-Direction Sensitivity (Range) Adjustment

The Opposite Direction sensitivity of the 2X is adjusted by pressing the remote control **MENU** key twice. The $\uparrow$ and $\downarrow$ keys then cycle through the five (5) sensitivity levels: **SEn 0**, **SEn 1**, **SEn 2**, **SEn 3**, and **SEn 4** (Figure 15 shows sensitivity level 4, the factory default setting). In each case, the right-hand display refers to the current sensitivity setting. Sensitivity varies from **SEn 0** (minimum range) to **SEn 4** (maximum range). The sensitivity must be set separately for Same-Direction Mode and Opposite-Direction Mode. Press any of the four Target Zone keys to exit the Menu.

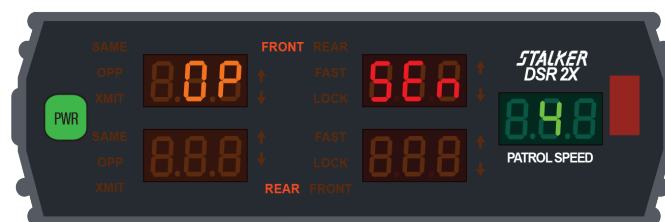


Figure 4

4.4 Same-Direction Sensitivity (Range) Adjustment

The Same-Direction sensitivity of the 2X is adjusted by pressing the remote control **MENU** key three times. The $\uparrow$ and $\downarrow$ keys then cycle through the five (5) sensitivity levels: **SEn 0**, **SEn 1**, **SEn 2**, **SEn 3**, and **SEn 4** (Figure 16 shows sensitivity level 3, the factory default setting). In each case, the right-hand display refers to the current sensitivity setting. Sensitivity varies from **SEn 0** (minimum range) to **SEn 4** (maximum range). The sensitivity must be set separately for same direction mode and opposite direction mode. Press any of the four Target Zone keys to exit the Menu.

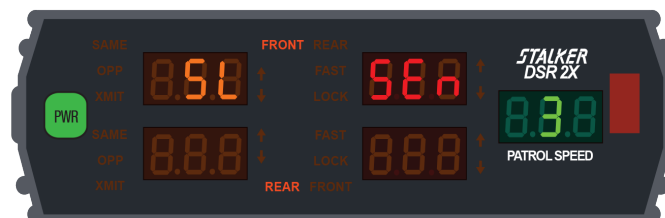


Figure 5

4.5 Audio Squelch ON/OFF

The audio squelch of the 2X is adjusted by pressing the remote control **MENU** key four times. (Figure 17). The $\uparrow$ and $\downarrow$ keys toggle the squelch override on and off. In the normal on position, audio will be heard only when a target is being tracked. Press any of the four Target Zone keys to exit the Menu.

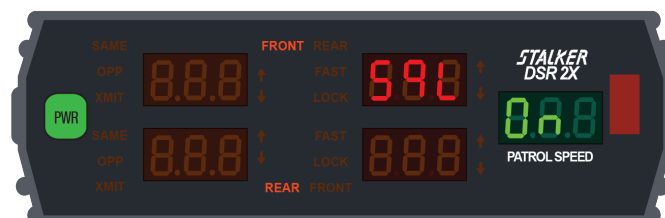


Figure 6

4.6 Low-End Patrol Speed Selection

Traditional radar units exclude patrol speed

tracking below 20 MPH. One of the unique features of the 2X is that it allows patrol speed tracking below 5 MPH. This feature is very popular and is excellent for enforcing school zones.

The Low-End Patrol Speed of the 2X is adjusted by pressing the remote control **MENU** key five times. (Figure 18). The $\uparrow$ and $\downarrow$ keys are then used to set the Low-End Patrol Speed. The digits displayed in the Patrol Window refer to the current Low-End Patrol Speed of either 5 MPH, 10 MPH, or 20 MPH. A Low-End Patrol Speed of 20 MPH is the factory default. When using the in-car VSS, this function is not required and is not available. Press any of the four Target Zone keys to exit the Menu.

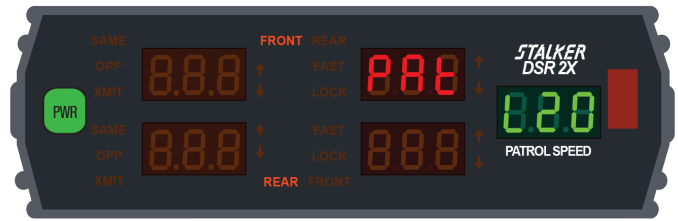


Figure 7

4.7 Patrol Speed Shadowing

When the Low-End Patrol Speed is set to 5, the 2X is more prone to “shadowing”. Patrol speed is measured from ground reflection. Shadowing occurs when a strong same direction target in the radar beam replaces this weaker passing ground reflection.

There are three options for eliminating the shadowing effect:

1. To eliminate the shadowing effect in the city, make the unit re-acquire the correct patrol speed by pressing the **PS BLANK** key.
2. To eliminate the shadowing effect on highways, change the Low-End Patrol Speed from 5 MPH to 20 MPH,
3. To eliminate all shadowing, operate the radar using the optional VSS mode and using VSS cabling in the patrol vehicle.

4.8 Rear Traffic Alert Speed Selection

Rear Traffic Alert is a proprietary feature of the 2X designed to warn the patrol officer of rapidly overtaking Rear Same-Direction traffic. Please see page 28 for details.

The Rear Traffic Alert Speed Selection mode for the 2X is entered by pressing the remote control **MENU** key 6 times. The $\uparrow$ and $\downarrow$ keys are then used to set the closing speed above which the Rear Traffic Alert will sound. Figure 19 shows a closing speed of 30 MPH, the factory default. Press any of the four Target Zone keys to exit the Menu.

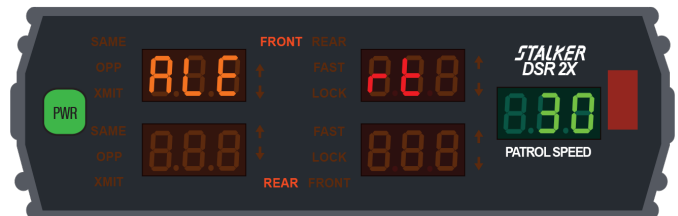


Figure 8

4.9 Antenna Selection

The Number of Antennas Selection mode for the 2X is entered by pressing the remote control **MENU** key 7 times. The $\uparrow$ and $\downarrow$ keys are then used to select 1 (front only) or 2 (front and rear) antennas. Figure 20 shows 2 antennas selected, the factory default. If one antenna is selected, it must be the front antenna. If one antenna is selected, the rear antenna will be turned off.

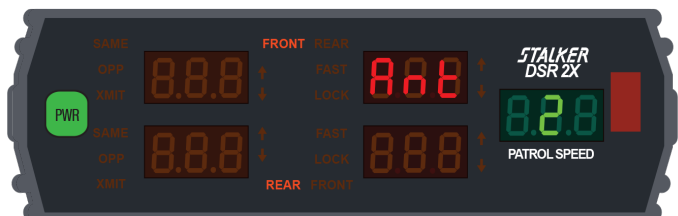


Figure 9

Section 5 - About Target Zones

This manual refers to the four areas that a traffic radar monitors as **Target Zones**. Conventional moving radar can monitor traffic in only one Target Zone. Those Zones are:

- Front Opposite shown in Blue
- Front Same shown in Red
- Rear Opposite shown in Yellow
- Rear Same shown in Green



With the 2X, two moving Target Zones, or all four stationary Target Zones, can be monitored simultaneously. That is because the 2X is actually two independent radar units driving a single display unit.

In Moving Mode, two Target Zones can be simultaneously monitored – one of the two front Target Zones and one of the two rear Target Zones.

In Stationary Mode, all four Target Zones can be simultaneously monitored. The display's direction arrows indicate target direction for both the front and the rear display windows. Or, if desired, only one front Target Zone and one rear Target Zone can be simultaneously monitored.

5.1 Setting the Four Target Zones

Each Target Zone can be individually activated using the cordless remote control.

FRONT SAME - To activate the Front Same Target Zone, press the front antenna **SAME** key. To confirm activation, the front **SAME** and **XMIT** display icons will be illuminated. *Figure 27* illustrates this condition.

FRONT OPPOSITE - To activate the Front Opposite Target Zone, press the front antenna **OPP** key. To confirm activation, the front **OPP** and **XMIT** display icons will be illuminated. *Figure 22* illustrates this condition.

REAR SAME - To activate the Rear Same Target Zone, press the rear antenna **SAME** key. To confirm activation, the rear **SAME** and **XMIT** display icons will be illuminated. *Figure 23* illustrates this condition.

REAR OPPOSITE - To activate the Rear Opposite Target Zone, press the rear antenna **OPP** key. To confirm activation, the rear **OPP** and **XMIT** display icons will be illuminated. *Figure 24* illustrates this condition.

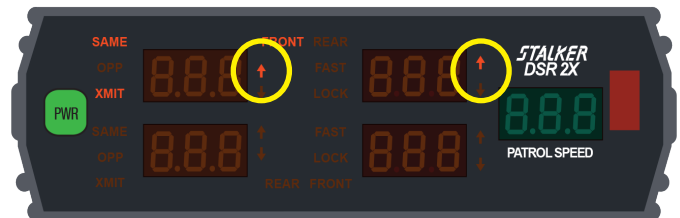


Figure 10

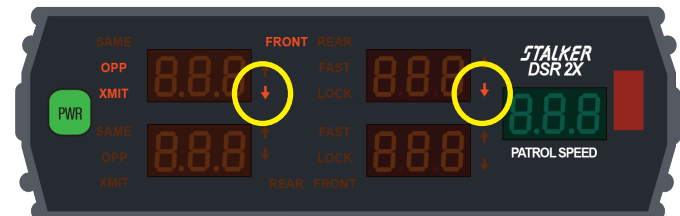


Figure 11

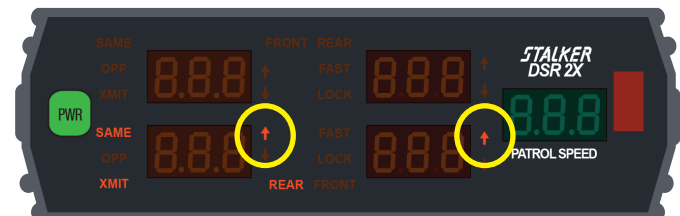


Figure 12

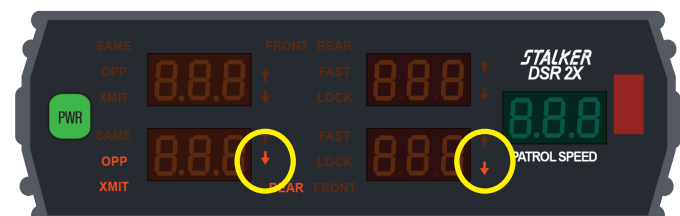


Figure 13

5.2 Hold Mode

Depending on the type of remote you have, hold mode can be selected by:

- On the Fast-Lock remote press and hold the **Hold** key.
- On the Instant-On remote briefly press the **HOLD** key.

In hold mode, the **XMIT** icon will be off, and no signal will be transmitted. This prevents discovery by radar detectors. When in hold, the 2X remembers the last patrol speed and looks for that speed first when changing from hold to transmit.

Section 6 - Selecting Target Zones

In Stationary Mode, up to all four Target Zones can be active and monitored simultaneously using either OPP/SAME Stationary Mode or DUAL ZONE operation. To activate a Target Zone, press the desired Target Zone key on the remote control. The corresponding Target Zone icon will illuminate on the Display Unit. See the examples below.

6.1 Stationary Target Zones Settings

To enter OPP/SAME Stationary Mode on either antenna, press the second Target Zone key within one second of activating the first. The **SAME**, **OPP**, and **XMIT** display icons will be illuminated.

Figure 21 illustrates OPP/SAME operation with all front targets tracked. All front targets (both directions) share the top display. Target direction is indicated by the arrows.

Only 2 front strongest and faster targets in either direction of travel can be tracked. In Figure 25 the strongest target (53) is approaching, indicated by the down arrow, and the fastest target (60) is going away, indicated by the up arrow.

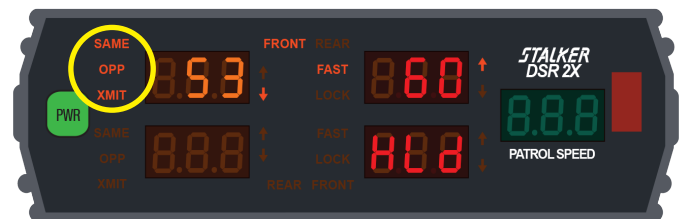


Figure 14

6.2 Dual Zone Mode

The 2X allows an operator to monitor two target zones with a single antenna simultaneously. To put the 2X in Dual Zone mode, press and hold the MENU key. All the SAME, OPP, FRONT, REAR icons and SEL (displayed in the patrol speed window) will begin flashing.

To select the front antenna for Dual Zone mode, use the front antenna keys on the remote. Press the front antenna SAME or OPP key to choose the zone to be displayed in the top window. Next, press the other front antenna key not previously pressed for the zone to be displayed in the bottom window. To exit Dual Zone mode, press either the SAME or OPP rear antenna key on the remote control.

Figure 26 illustrates improved DUAL ZONE operation with both the Front Same and the Front Opposite Target Zones active – in separate display windows. The Front Opposite Zone is in the top display and the Front Same Zone is on the bottom display. Direction is indicated by the window location (in addition to the arrows).

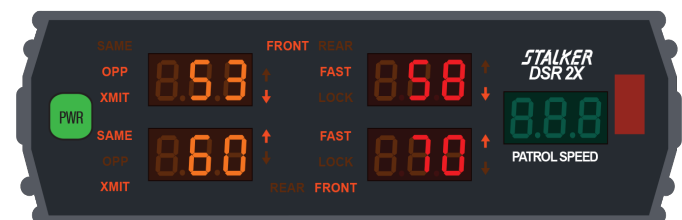


Figure 15

To select the rear antenna for Dual Zone mode, use the rear antenna keys on the remote control. Press the rear antenna SAME or OPP key to choose the zone to be displayed in the top window. Next, press the other rear antenna key not previously pressed for the zone to be displayed in the bottom window. To exit Dual Zone mode, press either the SAME or OPP front antenna key. Dual Zone mode can be used for both moving and stationary radar.

Stationary Dual Zone Operation

In stationary mode, to select all four target zones, put both the front and rear antenna in opposite (OPP) direction mode. Next, rapidly press the following key sequence on the remote control for the front antenna, SAME – OPP – SAME. Repeat this step for the rear antenna. All, SAME, OPP,

FRONT, REAR, and FAST icons will be illuminated indicating that the radar is in bi-directional mode enabling the operator to monitor all traffic zones at the same time. To exit this mode, press and hold any zone key on each antenna for 1.5 seconds.

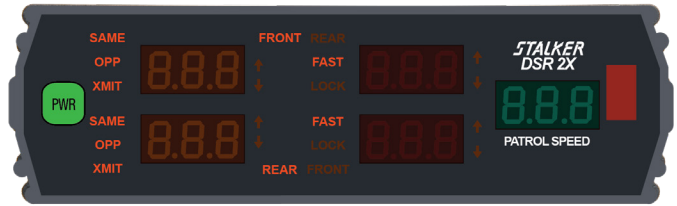


Figure 16

6.3 Moving Target Zones Settings

In Moving Mode, any two of the four available Target Zones can be active and monitored simultaneously using either SINGLE ZONE operation or DUAL ZONE operation. See the examples below.

Figure 28 illustrates two common Target Zones active in Moving Mode with faster target locking enabled. The **XMIT** icon should appear for each antenna that is transmitting. Be sure the patrol speed corresponds to the vehicle speedometer. The speed of an approaching target will appear in the Target Window and a Doppler audio tone will be heard from the speaker.



Figure 17

Figure 29 is an example where patrol speed is 50 and the approaching opposite direction target speed is 68. The target speed is continually measured and displayed. The Doppler audio tone is heard while the 2X is in transmit mode and at least one target is present.



Figure 18

For SINGLE ZONE operation, simply press one of the two front target zone keys (**SAME** or **OPP**) and one of the two rear target zone keys. The corresponding Target Zone icons will illuminate on the Display Unit.

To select front DUAL ZONE operation, press and hold the **MENU** key on the remote control. The **SAME**, **OPP**, **FRONT**, and **REAR** icons along with **SEL** (in the right window) flashing indicating that the radar is ready to select two target zones from the same antenna (DUAL ZONE operation).

The radar can only acquire a patrol speed up to 95 MPH (except in VSS mode). Once acquired, the radar will track patrol speed up to 150 MPH.

NOTE

While operating in VSS mode (see section titled "VSS OPTION" on page 40) the radar uses the presence (or absence) of VSS pulses to acquire and track patrol speeds from 1 MPH to 200 MPH.

Section 7 - Other Settings

7.1 Doppler Audio

The **VOLUME** key is used to adjust the volume of the Target Doppler audio up or down. Two different Audio levels can be set – one associated with Moving Mode, and the other associated with Stationary Mode. Press the **VOLUME** key once to initiate Doppler Audio adjustment. Use the **↑** and **↓** keys to step the display through **Aud 0** through **Aud 9**. **Aud 0** is off, **Aud 1** (Figure 30) is softest and **Aud 9** (Figure 31) is loudest.

NOTE

Some states do not allow **Aud 0** Doppler.

When tracking a Doppler audio tone emits from the speaker. The pitch of this tone is a precise indication of target speed. The tone quality is useful for judging possible interference or multiple targets.

In Opposite-Direction Moving Mode, the 2X compensates for patrol speed variations when generating the Doppler audio. Since the audio tones do not vary with patrol speed, the operator soon learns to correlate the Doppler audio with the target speed. In Same-Direction Moving Mode, the 2X generates difference audio instead of the true audio described above. The difference audio gives a direct indication of the difference in speed between the patrol vehicle and the target vehicle.

Since the 2X is capable of tracking multiple targets, two or more Doppler tones are often heard.

When VSS is enabled, the radar will automatically switch between moving and stationary **Aud X** levels when switching between modes. The **bEE P** and **UOI CE** volume levels remain the same in both stationary and Moving Modes.

7.2 Beep Tones

The **VOLUME** key and **↑** and **↓** keys are also used to adjust the beep tones. Press the **VOLUME** key two times to activate beep tone adjustment. Use the **↑** and **↓** keys to step from **0** through **9**. The beep tone is off when set to **0** (Figure 32) and loudest when set to **9**.

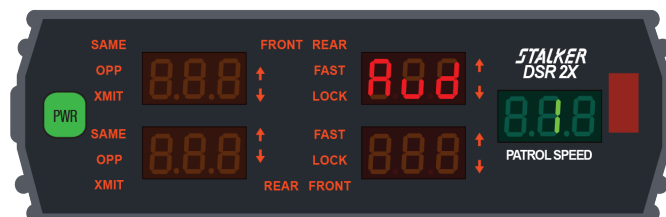


Figure 19

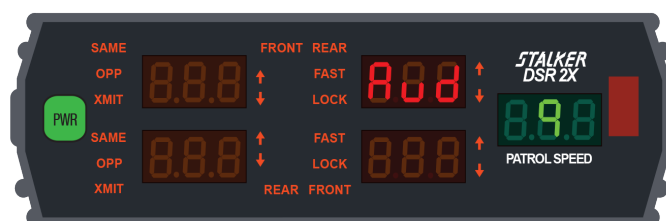


Figure 20

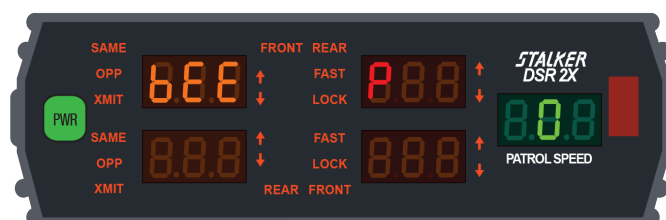


Figure 21

7.3 Voice Enunciator

The **VOLUME** key and **↑** and **↓** keys are used to adjust the volume of the voice enunciator. Press the **VOLUME** key three times to activate voice volume adjustment. Use the **↑** and **↓** keys to step from volume level **0** through **9**. The voice is off when set to **0** and loudest when set to **9** (Figure 33).

7.4 Patrol Speed Blanking

After locking either the front or rear target speeds (Figure 34), the patrol speed window may be “blanked” by pressing the PS BLANK key (Figure 35).

The PS BLANK key can be used to toggle between:

- 1) blanked patrol speed window,
- 2) front lock patrol speed, or
- 3) rear lock patrol speed.

When the Lock Window is not occupied by a “locked” target speed and VSS is not used, the PS BLANK key is used to re-acquire patrol speed.

7.5 Software Version

During “Power On”, while all segments are illuminated (Figure 36), press the **MENU** key to display the installed software version. Figure 36 indicates that software version 4 is installed. Check with the factory for the availability of an updated software version, if desired.

7.6 Transmitter Frequency

Immediately below the software version (Figure 37), the nominal transmitter frequency is displayed. A transmitter frequency of 34.7 GHz is indicated.

7.7 Display Lighting

The display brightness is adjusted by using the two (2) function **LIGHT** key on the remote control. A single depression of the **LIGHT** key activates the remote control keyboard back light for 6 seconds. Two rapid depressions of the **LIGHT** key activate the display’s brightness control. Additional depressions of the **LIGHT** key step the display intensity through six levels of brightness, ranging from **bri 1** (low) to **bri 6** (high) and the **bri A** (automatic) position.

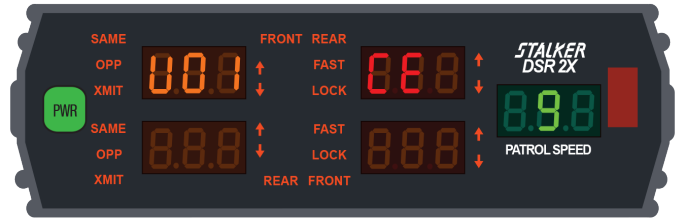


Figure 22

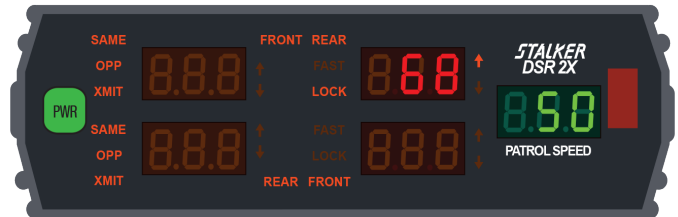


Figure 23

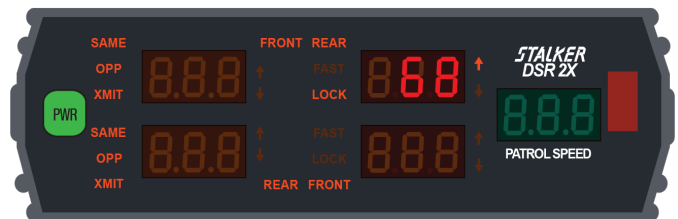


Figure 24

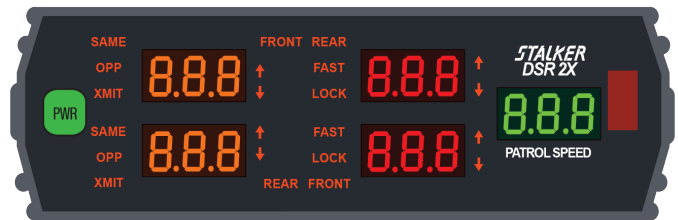


Figure 25

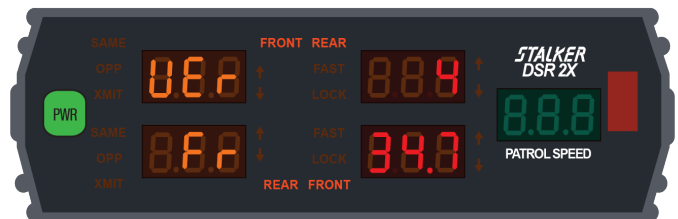


Figure 26

Figure 38 shows brightness level **4**.

To change the automatic brightness settings for day and night, locate the small, round light sensor port under the Patrol Speed window. Set the brightness to **bri A**, and the display brightness will adjust to current ambient light conditions.

Both the low-light and the bright-light automatic settings can be adjusted from **A1** through **A6** by pressing the up and down arrow keys while a setting is displayed.

If the ambient light is bright, blocking the light sensor with your finger will cause the display to dim to its low-light setting. If the ambient light is low, shining a flashlight into the light sensor will cause the display to brighten to its bright-light setting.

The default low-light setting is **A2**, and the default bright-light setting is **A6**.

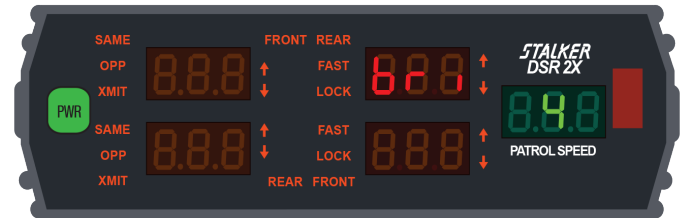


Figure 27

Section 8 - Rear Traffic Alert

Rear Traffic Alert, a proprietary feature of the 2X, is designed to warn the patrol officer of rapidly overtaking Rear Same-Direction traffic. Rear Traffic Alert is active when the patrol vehicle is most vulnerable to rear-end collisions - pulling into traffic from a standing start.

NOTE

If the 2X senses a rear approaching vehicle closing at a speed in excess of the user-set approach speed, it prompts the officer with a distinctive “English Horn” audio sound and flashes **ALE rt** in the rear antenna speed windows.

Rear Traffic Alert is always active, unless disabled in the OPTIONS MENU. Rear Traffic Alerts can also be avoided by setting the closing speed to a high speed, such as 200.

Rear Traffic Alert is independent of the rear target zone selection – either the Rear Opposite or Rear Same target zone can be selected. In a traffic alert condition, the 2X will sound the alert tone and flash the alert display as long as the threat persists. Once the threat is eliminated, the 2X will automatically resume tracking rear targets. Rear Traffic Alert will be disabled if the rear antenna is placed in **HLd** (hold).

With Rear Traffic Alert enabled, go to the OPERATOR MENU (*page 18*) to select the Rear Traffic Alert closing speed. In the OPERATOR MENU, repeatedly press the **MENU** key until **ALE rt** is displayed. Set the desired Rear Traffic Alert speed by using the **↑** and **↓** keys (the factory default speed is 30 MPH). Press the **↑** key or the **↓** key to increase or decrease alert speed. Exit the OPERATOR MENU mode and return to radar mode by pressing any of the four zone keys.

Rear Traffic Alert Requirements:

1. The radar must have VSS cabling installed in the vehicle and must be operating in VSS mode.
2. The rear antenna must be transmitting.
3. Direction sensing will be used to ensure that the rear traffic is closing on the patrol vehicle.
4. The radar sensitivity is reduced to less than **SEn 1** (to ensure close proximity) for measurement of approaching rear traffic. All rear targets that are “outside” of the Rear Traffic Alert requirements will have normal sensitivity.
5. To reduce Rear Traffic Alert warnings while traveling at a steady speed, slowing down to turn, or slowing down to a stop, the radar only enables Rear Traffic Alert when it senses vehicle acceleration.

NOTE

When operating in Dual Zone, Stationary mode where only the front antenna is active, once the 2X detects VSS pulses from the patrol vehicle, it will automatically activate the rear antenna for Rear Traffic Alert (unless disabled by the operator). No speeds will be shown, but the alert feature will be active.

Section 9 - Testing the 2X

Unless required by state statute or department policy, Applied Concepts, Inc., Stalker Radar, does not require a mechanical or electronic tuning fork test.

Our radar systems are designed to self-test each antenna, the counting unit, and the connection between all, and does so 22 times per second using high-accuracy quartz crystals.

The Stalker DSR 2X provides an auditory confirmation of this test every ten minutes. If there is a failure, the unit will display FAIL immediately.

Applied Concepts always recommends you confirm the Patrol Speed displayed on the radar against your speedometer as suggested when using Tracking History.

9.1 Power-On Self-Test

Each time the unit is powered on, an automatic self-test is performed to verify that the unit functions. All displays indicate **888** (Figure 39) during the test. A melodic 4-beep "happy" tone indicates the successful completion of this test. If a problem is detected, **FAIL** will be displayed along with a 20-beep tone.

9.2 Internal Circuit Test

An internal circuit test can be performed at any time by pressing and holding the **TEST** key. This performs a diagnostic check on the display/counting unit, the antennas, and antenna cables. The display/counting unit will first perform a segment test, processor check, memory check, and crystal accuracy check. Next the input voltage and internal temperature are checked to verify they are within limits. (Figure 40) Following will be the display of speeds **10**, **35**, and **65** (Figure 41, Figure 42, and Figure 43).

NOTE

Internal tests cannot be performed while in Dual Zone mode. Exit Dual Zone to normal Single Zone operation to perform these tests.

NOTE

We recommend that the internal circuit test be performed on each antenna.

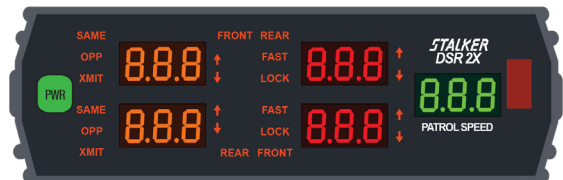


Figure 28



Figure 29



Figure 30



Figure 31

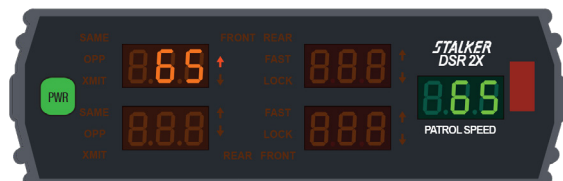


Figure 32

A comprehensive test is also performed on both antennas by the unit to ensure the integrity of the antenna cables and electronics. After all the tests are completed, **PASS** (Figure 44) along with a melodic 4-beep “happy” tone indicate successful test completion. **FAIL** along with a 20-beep tone indicates a failed self-test.

9.3 Automatic Self-Test

An automatic self-test (indicated by a melodic 4-beep “happy” tone) is performed every 10 minutes.

9.4 Optional Patrol Speed Test

While driving a patrol vehicle forward, alternately switch between the front **OPP** Target Zone and the front and the rear antennas. As you alternate between the two, verify that the patrol speed is identical and matches, within reason, with the patrol speedometer.

9.5 Interference From Other Transmitters

Strong signals from nearby radio transmitters may interfere with operation of the 2X. When this happens the 2X signals that an interference source has been detected (Figure 46) by displaying **rFI**. Speed readings are inhibited when this occurs to prevent the possibility of false readings. The interference source may be the vehicle’s two-way radio, another nearby transmitter, or an illegal radar-jamming device.

9.6 Low Supply Voltage

A low voltage condition from the vehicle’s electrical system will cause the **U Lo** display to illuminate (Figure 47), and will inhibit speed readings. An extremely noisy vehicle electrical system may result in false readings or erratic operation. If this condition occurs, a two-conductor, shielded (fused) cable should be connected directly from the vehicle battery to the cigarette-plug on the dash. This should eliminate any problems from vehicle electrical noise.



Figure 33



Figure 34

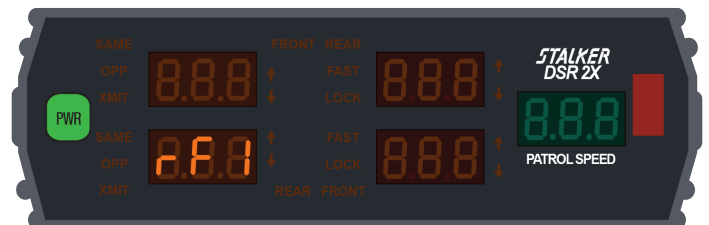


Figure 35



Figure 36

Section 10 - Tuning Fork Testing

The tuning fork test can only be performed during the 5-minute interval that follows the internal circuit test in section 9 of this manual. After pressing the **SELF TEST** key, wait to start a tuning fork test until the decimal points illuminate in the Target Windows on the display.

Two (2) tuning forks are provided with the DSR 2X. The tuning forks are calibrated for 25 mph and 40 mph unless otherwise specified. The accuracy is +/- 1 mph from what is stamped on the tuning fork.

If a tuning fork test is required, since there is only one accuracy circuit, one tuning fork test on the front antenna is sufficient to satisfy a requirement to check the DSR 2X. When performing tuning fork tests, always follow jurisdictional and department requirements.

10.1 Stationary Mode Tuning Fork Test

To perform the tuning fork test: ensure the power is on then press the **TEST** key and wait for the tuning fork mode following the internal test sequence.

The presence of a decimal point at the bottom of each of the two Target Windows indicates that the 2X is in tuning fork mode (*Figure 48*).



Figure 37

NOTE

During tuning fork testing, avoid pressing the **HOLD** keys on the remote control. Pressing the **HOLD** keys will exit the tuning fork test mode. The 2X will automatically place the antennas in **HOLD** as required during the test.

The **MOV/STA** key is normally disabled during VSS operation but will be active during the tuning fork tests. If a vehicle with VSS starts moving, tuning fork mode is automatically exited.



Figure 38

Strike the 25-mph tuning fork against a hard nonmetallic surface. Quickly hold the tuning fork approximately two (2) inches in front of the antenna, with the narrow edge of the fork facing the antenna. The Target Window should indicate 25 ± 1 mph (*Figure 49*).



Figure 39

Repeat this test with the 40 mph tuning fork (*Figure 50*).

To test the rear antenna, press the rear antenna **OPP** or **SAME** key, strike the 25 mph fork and place it in front of the rear antenna then repeat with the 40 mph fork. To continue testing in the moving mode, go to *section 10.2*.

10.2 Opposite-Direction Moving Mode Tuning Fork Test

NOTE

If at any time the decimal points are not present while attempting a tuning fork test, the **TEST** key must be pressed and another self-test initiated to reset the 5 minute tuning fork window.

To continue the tuning fork test or performing a moving mode tuning fork test on the front antenna, ensure the power is on and the decimal points are present in both target windows. Press the **MOV/ STA** key to select moving mode. The presence of brackets [] in the Patrol speed window will indicate the 2X is in moving mode (Figure 51). Press the front **OPP** key to enter transmit mode.

Pressing any of the HOLD keys will take the 2X out of tuning fork test mode.

Strike both the 25-mph and 40-mph tuning fork against a hard nonmetallic surface.

Quickly hold the 25-mph tuning fork approximately two (2) inches in front of the active antenna, with the narrow edge of the fork facing the antenna. The patrol window should indicate 25 ± 1 mph (Figure 52). Then move the higher speed fork in front of the antenna with the narrow edge facing the antenna. The Target Window should register $15 \text{ mph} \pm 2$ mph (Figure 53), which is the difference in speed of the two forks.

To check the rear antenna, press the Rear **OPP** key on the remote. Strike both forks and repeat the same process. To continue tuning fork testing, continue to section 10.3.

NOTE

Pressing any of the **HOLD** keys will take the unit out of tuning fork test mode.

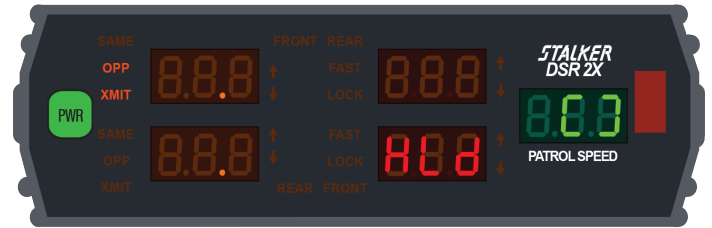


Figure 40

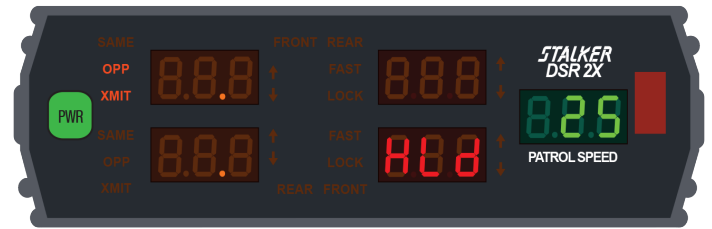


Figure 41

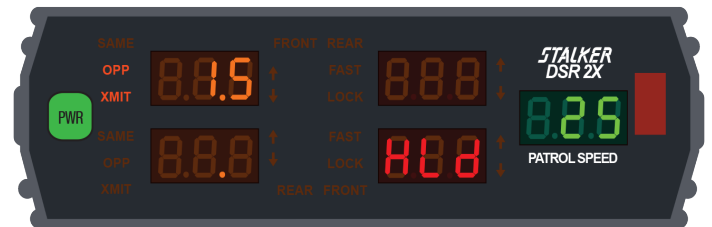


Figure 42

10.3 Same-Direction Moving Mode Tuning Fork Test

NOTE

If at any time the decimal points are not present while attempting a tuning fork test, the **TEST** key must be pressed and another self-test initiated to reset the 5 minute tuning fork window.

To continue the same direction tuning fork test on the front antenna, ensure the power is on, the decimal points appear in the Target windows, and brackets [] appear in the Patrol speed window. Press the front **SAME** key to enter transmit mode. (Figure 54).

Pressing any of the HOLD keys will take the 2X out of tuning fork test mode.

Strike the tuning forks against a hard, nonmetallic surface. Quickly hold the 40-mph tuning fork approximately two (2) inches in front of the active antenna, with the narrow edge of the fork facing the antenna. The patrol window should indicate 40 ± 1 mph (Figure 55).

Next, add the 25-mph fork along with the 40-mph fork in front of the antenna with the narrow edge facing the antenna. The Target Window should register $65 \text{ mph} \pm 2 \text{ mph}$ (Figure 56), which is the sum of speeds of the two forks.

To perform a tuning fork test on the rear antenna, press the rear **SAME** key on the remote control and repeat the test process by striking both forks and placing them in front of the rear antenna. To exit tuning fork test mode, wait for the tuning fork test mode to time out or press the **HOLD** key and the 2X will return to normal operating mode.

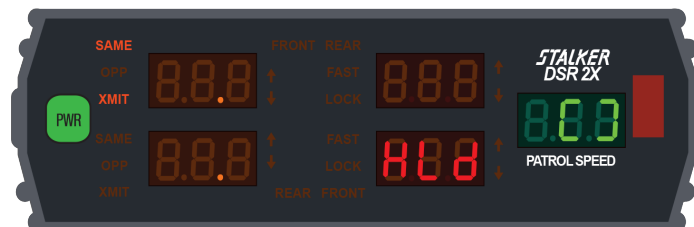


Figure 43

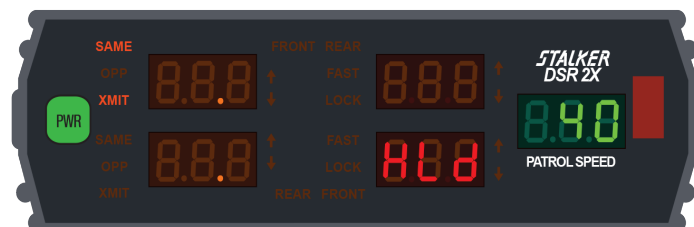


Figure 44

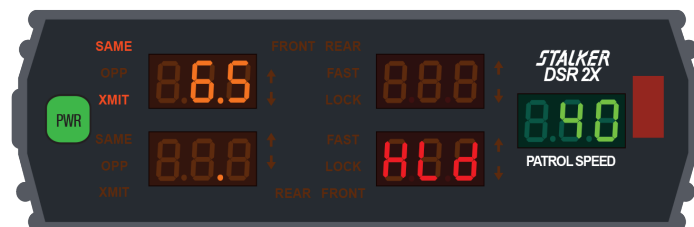


Figure 45

Section 11 - Troubleshooting

PWR key does not function:

Make sure all cables are mated correctly with their connectors. Check the vehicle cigarette-plug connector for dirty contacts. Check for a blown fuse in the 2X cigarette-plug.

Low or no speaker volume:

Press the  key on the remote control to adjust the volume. **Aud 1** (lowest level) to **Aud 9** (highest level).

Radar has short range:

Set range (sensitivity) control to **SEn 4** (longest range).

NOTE

Opposite-direction mode and same-direction mode sensitivity settings need to be set independently.

See *page 19*. Verify the antenna is aimed properly.

Radar shows incorrect patrol speed:

If the patrol window indicates an incorrect patrol speed, the **PS BLANK** key blanks the patrol speed window and acquires a new patrol speed. See Patrol Speed Shadowing Effect on *Page 20*.

Press the Menu key to change the low-end patrol speed from 5 MPH to 20 MPH, thus preventing patrol speed tracking below 20 MPH. It is not possible to allow patrol speed tracking below 20 MPH and to eliminate patrol speed shadowing simultaneously. See Low-End Patrol Speed Selection on *page 20*.

Radar will not display below 20 MPH when VSS is not used:

Press the Menu key to change the low-end patrol speed from 20 MPH to 5 MPH. See Low-End Patrol Speed Selection on *page 20*. The radar will now be susceptible to patrol speed “shadowing,” which can be easily corrected by pressing the **PS BLANK** key.

Radar has trouble maintaining patrol speed:

Mount the antenna higher above the dash and/or point antenna slightly down toward the ground. Make sure the wipers are not in the radar beam path. Make sure the windshield does not have paint/mask around the perimeter.

Radar picks up vehicle fan and reads 5 to 30 MPH in stationary mode:

Check for proper aiming of antenna. Make sure that the paint/mask or metallic objects are not deflecting the radar beam down into defroster vents. If so, raise antenna above obstruction. See Fan Noise on *page 36*.

Radar display “ULo”:

Make sure the cigarette-plug is securely installed and the contacts are clean.

Radar flashes “Hot” in display:

The radar is overheating. Move radar out of direct sun. Do not leave radar operating in a closed vehicle.

11.1 Interference Sources and Remedies

A variety of sources, both natural and man-made, can cause misleading indications or poor performance. The operator should note the symptoms described below, and take steps to avoid the problem, or ignore the misleading indications.

Rain:

Rain absorbs and scatters the radar signal. This can reduce target range.

Electrical Noise:

Electrical noise sources include neon signs, radio transmitters, power lines, and transformers. These influences may cause reduced range or intermittent readings. When these interferences are present, the **RFI** indicator should come on and suppress all readings.

Vehicle Ignition Noise:

An extremely noisy vehicle electrical system may cause erratic operation. If this condition occurs, it is recommended that a two conductor shielded cable be run directly from the vehicle battery to the cigarette lighter plug on the dash. This should eliminate any problems from vehicle electrical noise.

11.2 Patrol Vehicle HVAC Fan Speed Interference

Stalker's radars are manufactured to be very sensitive so they can provide you with superior range. This means that, if your radar system's antenna is mounted inside your patrol vehicle, it may receive signals caused by the fan in your vehicle's Heating, Ventilation, and Air Conditioning (HVAC) system. This will be more pronounced when you are operating in Stationary Mode and Same Direction Moving Mode, as most HVAC fan speeds are 30 MPH or less.

11.3 Reducing HVAC Fan Motor Speed Signals

The strength of signals caused by fan noise can vary at different locations across the dashboard of your vehicle, so you may have to test a few mounting locations before choosing a final placement location for your antenna.

If your mounts allow, start by placing your connected antenna in the lower left corner of the windshield and check for HVAC fan speeds. If you notice that your radar system is picking up fan speeds, try moving the antenna to a different area on the dashboard.

Ensure that the antenna is located where part of the radar beam isn't reflected directly back by objects like wipers, window trim, emergency lights, spotlights, or other accessories.

When you find your preferred mounting location, make sure to mount your antenna as close to the glass as possible, preferably within $\frac{1}{2}$ to 1 inch.

11.4 Fan Speed Suppression System

Newer Stalker Radar systems are equipped with vehicle HVAC fan speed suppression technology. To check if your radar system has this feature and if it is currently active, press and hold the **LIGHT** key on the remote control for at least 1.5 seconds. If equipped, your radar will display FAn SUP On (Figure 57), or FAn SUP OFF (Figure 58).

To turn the fan speed suppression system off, press and hold the **LIGHT** key on the remote control for at least 1.5 seconds then release, and quickly press and release the **LIGHT** key again. The radar will display FAn OFF. To turn the fan speed suppression system back ON, repeat this step.

The fan speed suppression system is designed to eliminate most HVAC fan speeds. Occasionally errant fan speed signals may still appear if HVAC fan speed signals are severe. If this occurs, we recommend mounting the antenna(s) outside the patrol vehicle.

11.5 Interference From Other Transmitters

Strong signals from nearby radio transmitters may interfere with operation of DSR 2X. The **rFI** indication (Figure 59) signals that an interference source has been detected. Speed readings are inhibited when this occurs to prevent the possibility of false readings. The interference source may be the vehicle's two-way radio, another nearby transmitter, or an illegal radar-jamming device.

11.6 Power Supply

A low voltage condition from the vehicle's electrical system will cause the **ULo** indication to illuminate (Figure 60), and will inhibit speed readings. An extremely noisy vehicle electrical system may result in false readings or erratic operation. If this condition occurs, a two-conductor, shielded cable should be connected directly from the vehicle battery to the cigarette-plug on the dash. This should eliminate any problems from vehicle electrical noise.

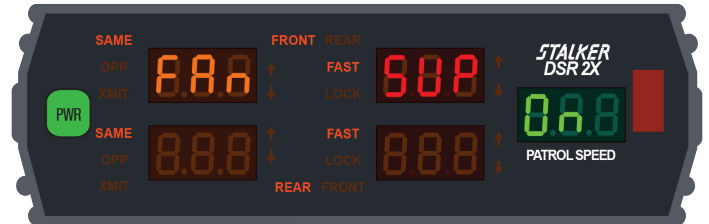


Figure 46

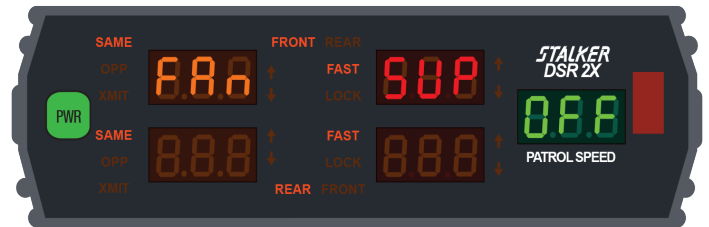


Figure 47

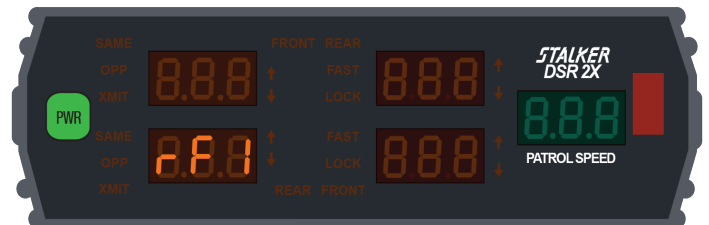


Figure 48



Figure 49

11.7 No Power

If the radar does not have power, check the fuse in the power cable. Unscrew the silver tip on the end of the cigarette plug and remove the fuse. If the fuse is blown, replace with a new fuse and test the radar.

If the power cable fuse is okay, check the fuse in the vehicle's fuse block that provides the power to the cigarette lighter.

If the vehicle's fuse is also okay, place the radar in a different vehicle or try a different radar in your vehicle.

Section 12 - Installation

NOTE

If the installation is to be moved from an older vehicle to a new vehicle, please check with Customer Service prior to installing any power cable to ensure you have the proper cable for the year, make and model of vehicle. Failure to do so may result in damage to the vehicle or radar unit which would void the warranty on the radar.

The 2X consists of a dash-mounted display unit; a counting unit that can be mounted with the display unit, or separately using the optional Remote Cabling Kit (P.N. 155-2211-00 or 155-2211-25); one or two antenna units; and a wireless or wired remote control unit. The 2X is powered from the 12-volt, vehicle power system using a Power Cable from the counting unit. Each system component should be installed in a location that provides good operator visibility and convenience, but does not obscure the road or interfere with air bag operation. The Ka-band antenna units are fully waterproof and may be installed outside the vehicle, if desired. The display and counting units are not waterproof and must be installed in a location sheltered from the weather. Longer cables are available from the factory for specific installations, if needed.

Display/Counting Unit - To mount the combined display/counting units, connect the Power Cable to the power jack on the back of the counting unit. Plug the front and/or rear antenna cables into the back of the counting unit. If using only one antenna, plug it into the front jack. After attaching the mounting bracket to the selected mounting surface with Velcro or screws, insert the combined display/counting unit into the mount and secure with thumbscrews (provided) into the threaded holes located on each side of the counting unit.

Display Unit - To mount the display unit only, separate the counting unit from the display unit by unscrewing the two screws on the back panel. Connect the 15-pin cable, supplied in the Remote Cabling Kit, to the connector on the back of the display unit. Attach the display unit to the mounting bracket using one thumbscrew on each side or attach directly to the dash. After mounting, make sure the display will not dislodge during high-speed maneuvers.

Counting Unit - To mount the counting unit separately from the display unit, select an out-of-the-way mounting location, such as under the dash or under the front seat. Connect the Power Cable to the power jack located on the back of the counting unit. Plug the front and/or rear antenna cables into the back of the counting unit. If using only one antenna, plug it into the front jack. Connect the 15-pin cable, supplied in the Remote Cabling Kit, to the connector on the front of the counting unit. Secure the mounting bracket on the counting unit to a suitable mounting surface with Velcro or screws. Install the counting unit into the bracket using a star knob on each side.

Antenna Unit - Before proceeding with the final installation, check the intended mounting locations for fan interference on both antennas. See the section on fan interference, *page 36*. Find a suitable location and attach the antenna mounting bracket to the selected mounting surface. Attach the antenna unit to the bracket. Connect the antenna cable to the antenna. Repeat these steps for the second antenna, if desired.

Cordless Remote Control - The only installation required for the remote control is to install the 2 AAA batteries. Remove the battery compartment cover. Install the batteries, paying attention to the polarity markings. Replace the battery cover. Velcro may be applied to the back of the remote control unit to attach it to the dash or other locations. Also, a microphone lug (supplied) can be attached to the back of the remote control to allow inserting into a microphone holder. An optional lanyard is also available.

12.1 2X Mounting Options

Stalker Radar has developed a number of different mounting options for the 2X unit depending upon the make and model of vehicle. Please contact your Stalker Regional Sales Manager for additional mounting options.

12.2 FCC RF Compliance

The antenna(s) must be installed to provide a separation distance directly in front of the antenna(s) of at least 15.7 inches (40 cm) from the human body.

12.3 Required Maintenance

No user maintenance is required on the 2X. However, if any problems are experienced during testing procedures or normal operation, the unit should be taken immediately to your department's radar specialist to determine the extent of the problem. If a malfunction has occurred, the unit will require servicing. Normal care should be taken by the user in handling the 2X to preserve the life and usefulness of the equipment.

Section 13 - The Perfect Patrol Speed with VSS

13.1 The VSS Speedometer Signal

Most modern police pursuit rated vehicles produce a speedometer pulse that can be used as a Vehicle Speed Sensor (VSS) signal. By obtaining a VSS signal, the DSR 2X monitors patrol vehicle speed and assists the radar finding the correct patrol vehicle speed faster. Stalker radar performs best with a VSS connection but the radar can be used without VSS.

13.2 VSS Options

1. Stalkers' preferred method for VSS is hardwire cable installation. To take advantage of VSS patrol speed steering, requires two cables that are provided with the VSS Option (VSS Installation Kit P.N. 200-0622-00; or 200-0623-00 if the DSR 2X radar is connected to an in-car video system). Stalker recommends the hardwired installation should be performed by an experienced technician.
2. The CAN/VSS Adapter can be used in patrol vehicles manufactured prior to 2020. Please contact our Customer Service to ensure the cable is correct for the year, make, and model of vehicle.

For patrol vehicles where access to the VSS signal isn't readily available, the Stalker Speed Module may be the best option to obtain VSS capability.



Figure 50: Locate your vehicle's On-Board Diagnostic (OBD) connector. Connect the Stalker CAN/VSS cable.

13.3 Automatic VSS Calibration

Once the VSS cables are properly installed, the radar is ready to synchronize the vehicle's VSS signal with the radar's ground speed readings. The calibration sequence will determine the proper ratio between the VSS signal speed and the radar ground speed. The numeric result is stored in the radar's memory (called a calibration factor).

IMPORTANT NOTE

Due to NHTSA's requirement of a gateway between a vehicle's OBD-II Port and Engine Control Module, 2020 and newer vehicles may not be compatible with Stalker's CAN/VSS system. In those cases our hardwired power/VSS cable or speed module is required for VSS. Contact Stalker Radar for details.

13.4 Speed Module

If you don't have access to an OBD-II port or VSS cable, you can connect your radar system to a Stalker Speed Module. The Stalker Speed Module is a small device that attaches to the back of any current Stalker radar unit. The Module utilizes Stalker's proprietary Inertial Navigation Technology combined with a Global Positioning System (GPS) satellite receiver to accurately determine vehicle patrol speed.

13.5 Moving Mode Operation

Follow this process if the radar is connected to the Vehicle Speed Sensor (VSS). After the unit is powered on and has received VSS pulses from the patrol vehicle, the unit will auto-switch from stationary to moving mode and a Learn Dot will appear in the Patrol window (*Figure 62*). At least one (1) antenna must be transmitting and you must drive above 30 MPH varying your speed. The Learn Dot alerts the operator that the radar is comparing the radar's patrol speed against the speed from the vehicle. Once it has synced with the VSS, the Learn Dot will turn off. This usually takes only 2-5 seconds but can be longer depending upon traffic. If the unit is newly installed, it may take several minutes to turn off.

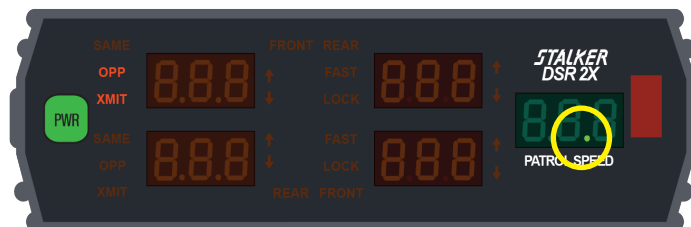


Figure 51

The operator should follow standard Tracking History procedures when taking any speed reading on the radar unit.

13.6 First-Time Calibration (or Installing the Radar in a New Vehicle)

To auto-calibrate you will need to operate (with the radar transmitting) in the moving mode for a few city blocks. The radar can complete the calibration sequence much faster if the speed of the vehicle is varied above 20 MPH (don't merely drive at a steady speed at first). When you see the patrol speed window consistently showing an accurate speed, then the auto-calibration sequence has been successful. If, after several blocks of driving, the patrol speed display is either blank or incorrect, then unplug the 6 pin VSS cable connector, rotate it 180 degrees, power up the radar, and try again.

13.7 Automatic Moving / Stationary Selection

When the radar is receiving VSS signals, and it has been calibrated, the unit should automatically switch between moving and stationary operation modes when the patrol vehicle moves and stops. While moving, the MOV/STA key will not override the moving / stationary mode selected by the VSS steered radar.

13.8 Patrol Speed Low Cutoff

Patrol Speed Low Cutoff or Lo5, Lo 20 is overridden when VSS is activated.

Section 14 - Legal

14.1 FCC Requirements

The Federal Communications Commission requires that all transmitting equipment carry a Grant of Type Acceptance. The DSR 2X is Type Accepted by the FCC under Type Acceptance number IBQACMI008. The FCC also requires that an operating license be obtained by the user of the equipment. In the case of local government agencies already licensed under part 90 in the Public Safety Radio Service, the requirement for a separate authorization for radar speed detection devices was eliminated, effective February 1, 1983, and licensees may operate speed detection devices as part of their base/mobile communications systems.

14.2 Case Law

Legal precedent has clearly established the accuracy and admissibility of Doppler speed radar evidence. Check with the local prosecutor to verify any local cases on radar. Please refer to your prosecutors for existing case law for your jurisdiction.

Section 15 - Radar Care

The Stalker RADAR system is designed for the rigorous demands of law enforcement equipment. To prolong the life of your Stalker RADAR, we recommend the following guidelines.

A soft cloth can be used to clean the Display Face.

An isopropyl alcohol wipe can be used to wipe down the Remote Control and Power Button.

Avoid spilling liquids on the Counting Unit, Display Face, or Remote Control.
Avoid breaking, crimping, or tearing the antenna cables.

Stalker antennas can be mounted outside of the patrol vehicle, but you must avoid direct contact to the antenna with high pressure spray.

For any questions regarding RADAR care or maintenance, call Stalker Customer Service.

Section 16 - Warranty

Manufacturer warrants this traffic speed radar to the original purchaser to be free of defects.

At its discretion, the manufacturer agrees to repair or replace all radar components that fail due to defective materials or workmanship for a period of three (3) years from the date of purchase. During the warranty period, there will be no charge for repair labor or parts. Purchaser shall return the failed unit to the factory or authorized service center, freight prepaid. The manufacturer will pay return shipping.

This warranty applies only to internal electronic components and circuitry. Warranty excludes normal wear-and-tear such as frayed cords, broken connectors, scratched or broken cases, or physical abuse. Manufacturer reserves the right to charge for defects and/or damages resulting from abuse or extraordinary environmental damage to the unit during the warranty period at rates normally charged for repairing such units not covered under warranty.

Seller warrants the radar devices manufactured by Applied Concepts, Inc. are designed to perform the function of determining the speed of motor vehicles.

The foregoing warranty is exclusive, in lieu of all other warranties, of quality, fitness, or merchantability, whether written, oral, or implied.

As a further limit on warranty, and as an expressed warning, the user should be aware that harmful personal contact may be made with seller's radar devices in the event of violent maneuvers, collisions, or other circumstances, even though said radar devices are installed and used according to instructions. Applied Concepts, Inc. specifically disclaims any liability for injury caused by the radar devices in all such circumstances.

NOTE

We have several Factory Authorized Service Centers located throughout the country. For the Service Center nearest you, call the factory at 1-800-STALKER (1-800-782-5537).

Notes:

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STALKER[®]



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