

Attaching *Hindsight 20/20*[®] to Standard

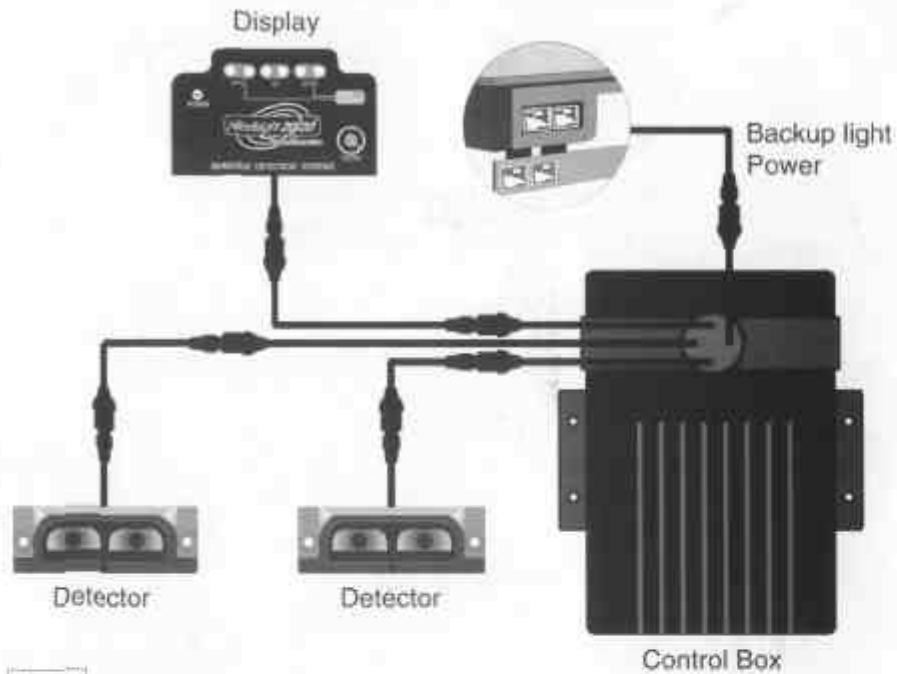


Fig. 12

Warranty

The *Hindsight 20/20*[®], Model HS-300 and HS-400 is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. ALL IMPLIED WARRANTIES ARE EXPRESSLY EXCLUDED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. The sole remedy for breach of warranty is repair or replacement of the defective unit by the manufacturer. (If the product is returned within the warranty period).

There is no liability for any consequential damages. For warranty repair or replacement, please call **Sonar Safety Systems, Inc.** at **800-326-6949**, for technical support. If the problem cannot be corrected based on this call, you will be issued a return authorization number for the return of the unit. Return the unit postpaid and include the Return Authorization No. to:

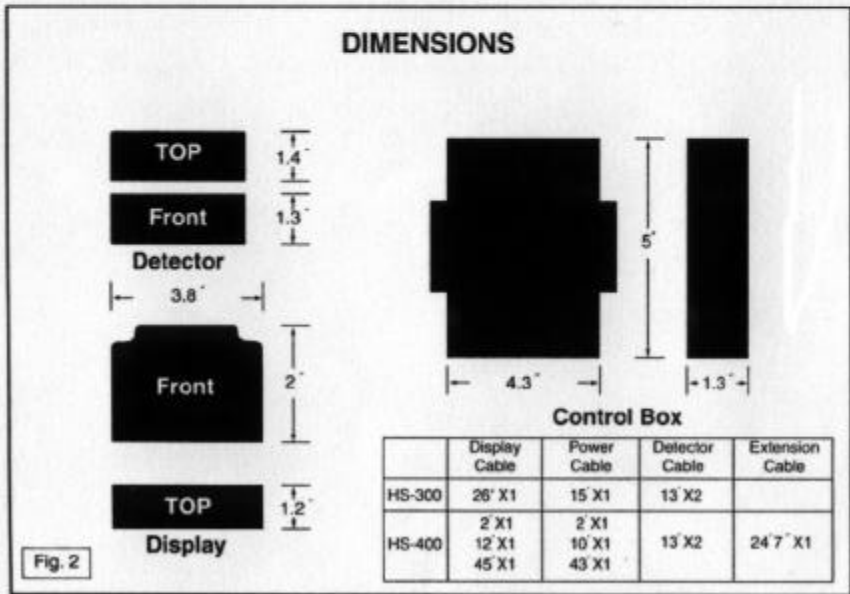
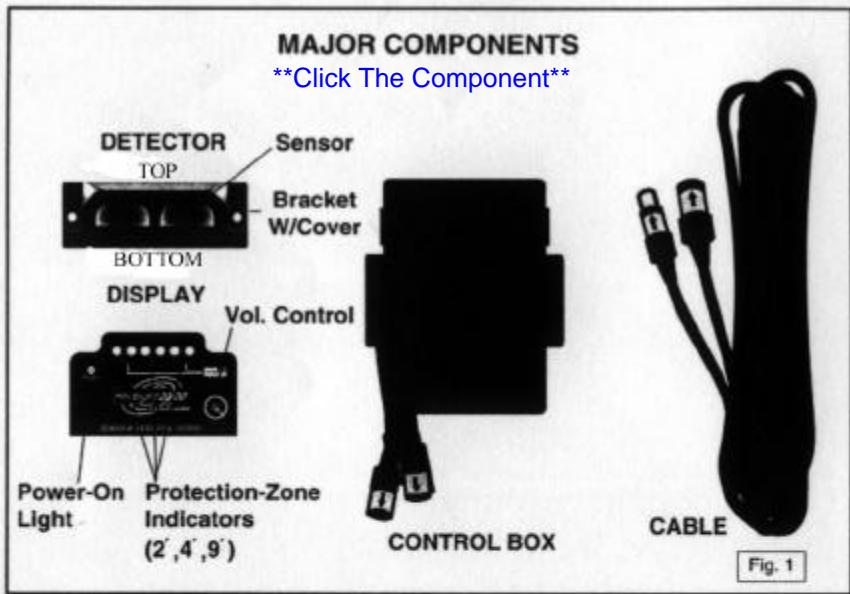
Sonar Safety Systems, Inc.
12411 McCann Drive
Santa Fe Springs, CA 90670
www.hindsight20-20.com

INSTALLATION MANUAL

FOR MODEL HS-300 and HS-400



Hindsight 20/20
Professional Value



INSTALLATION MANUAL

For the Hindsight 20/20® (Model HS-300 and HS-400)

GENERAL

Hindsight 20/20® Helps You Avoid Backing Accidents. The use of Hindsight 20/20® does not relieve the driver of any responsibility for safe vehicle operation. It is an aid and entirely supplemental to good driving procedure.

PRODUCT SUMMARY

Product Characteristics

- Self-monitoring, self-diagnostic system.
- Unhampered by rain, snow, frost, fog or darkness.
- Provides supplemental protection against most backing accidents.
- Volume control allows a choice of sound levels.

Operation

1. With the unit turned on, engage reverse gear then note the "ON" light on the display as well as the "BEEP" sound.
2. When backing, a green light accompanies a beeping sound when an object is within Zone I (4-9 feet back). **You should always stop and clear the path when hearing this signal. Do not wait for the object to be in Zone II or Zone III.**
3. The green & yellow lights accompany a beeping sound when an object is within Zone II (2-4 feet back).
4. The green, yellow & red lights accompany a faster beeping sound when an object is within Zone III (0-2 feet back).

Warning

Use Protection Zone II or III carefully and only when backing in a straight line, such as when backing up to a loading dock with an otherwise clear path. Always stop and clear obstruction when Zone I is activated. Never rely solely on Hindsight 20/20® for backing information.

● Specifications

Ultrasonic Frequency	40 KHz
Ultrasonic Sensitivity	-78 dB
Input Voltage	11V-31V
Power Consumption	2.5W
Operating Temperature	-13°F~167°F(-25°C~75°C)
Effective Range	9Feet (2.7 Meter)
Weight	1.5 Kg

Important

1. Detectors should be optimally mounted 24" from the ground (and never less than 18" from the ground). At less than 18" (0.45m) a slight angling up is necessary to avoid ground reflection and false alarms (See Fig. 6) for vertical detection angles. In addition to flat ground response, small objects like pebbles or low curbs that you may not wish to be warned about can be "tuned out" by angling the detectors upward.
2. The area that the detector covers for the HS-300 is 9' (2.7m) wide by 9' (2.7m) deep. The HS-400 is 10' (3m) wide by 9' (2.7m) deep. The appropriate distance between each detector is 3 feet (0.9m). See Fig. 8 for horizontal detection area.
3. The Detectors will only detect an object which will reflect the ultrasound signals. Therefore, if there is a ditch, depression, or other type of drop-off behind the vehicle, the Detectors will not be activated and no warning will be given. Conversely, uneven road surfaces can provide momentary detection and warning.
4. Install the Control Box in an area that is free from the extremes of vibration or moisture.
5. When installing, don't pull the wires too forcibly or you may cause damage.
6. Detectors won't function properly when the sensors are clogged-up. Please keep them clear of obstructions and reasonably clean.
7. When there is an error caused by short or open circuit, you will hear continuous beeping. Problems of this nature could be caused by a severed wire or a detector that has become obstructed or damaged. In this case, please check the display. If you see the "L" lamp is on, the left detector may not be working and if you see the "R" lamp is on, the right detector may not be working. Please check the detector and wiring where a problem is indicated.

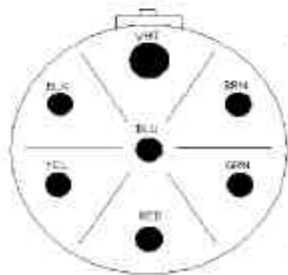
INSTALLATION INSTRUCTIONS

1. Connect the Power wire to the backup light circuitry: splice the Positive (+) wire from the backup light to the Hindsight 20/20® Red Wire and the Negative (-) to the Hindsight 20/20® Black Wire. Be sure to insulate the splice well to avoid short-circuits.
2. Connect the Control box to the display, the two detectors and to the power line. Please note that all connectors have different colored indicating arrows. Link connectors with matching colored arrows (Red to Red, Blue to Blue, Yellow to Yellow). This is particularly important with detection connectors as it ensures that the Left and Right detectors are properly installed.
3. Determine the proper place to mount the Detectors on the rear of the vehicle so that the pattern of ultrasound fully covers the rear path of vehicle from side to side and 9 feet to the rear. While the system is operational, temporarily connect the Display cable (Green arrow) to the DP cable (Green) coming from Control Box. Now the system will function. Test the proper positioning of the Detectors by placing an object (or person) in different points in the protection area in order to see when the alarm sounds. When the correct position is determined, use L-type Bracket or not. (See page 7 and Figs. 4 for Detector installation instructions).
4. The Control Box and detector assemblies (includes cables between detectors and control box) should be considered a "matched set". The Detectors and the wire leading to the Control Box are individually "tuned" to your unit, because of this, you **MUST NOT CUT THE WIRE** connecting to it. The detector wires are provided at factory-fixed lengths and **CAN NOT BE ALTERED**. If you have more wire than is needed, we suggest you bundle the excess length and tuck it somewhere between the Detectors and the Control Box. (If additional overall length is needed between the control box and the Display, an optional extension cable to the Display is available in 24" lengths.)
5. Mount the Control Box in a protected area free from extreme vibration or moisture. You can use the included brackets or double-sided tape. [Fig. 9]. If the position for Control Box is unsuitable for mounting, use the Control Box Bracket **Optional** (See the Fig. 5 for Option)
6. Connect the Intermediary Wire to the short wire (Green arrow on connector) coming from the Control Box (labeled "DP" ON CONTROL BOX). Then run the 24" and the intermediary wire to the Display in the cab.
7. Mount the Display in the driver's compartment. Mount so that the driver will be able to see it within his or her peripheral vision, while simultaneously doing normal tasks and performing safe backing procedures. If mounting with double-sided tape, be sure to test placement before removal of the tape, (tape will be difficult to remove once it is in place). When Display is mounted, connect the short wire to the intermediary wire. If the position of Display is unsuitable for mounting Control Box, use Display Bracket **Optional** (See the Fig. 6 for Option)
8. The system will now operate when the vehicle is placed in reverse gear. Be sure to review the operation section on page 3 of this manual with drivers that will operate the vehicle.

HS-400 TRACTOR-TRAILER INSTALLATION

1. After installing the *Hindsight 20/20*[®], Detectors and Control Box on the trailer, make sure that the Display cable and power cable if no back-up light power is available at rear of trailer are long enough to reach the front of the trailer (this is where the seven-wire connecting receptacle should be located). If cable is not sufficient, you will need to order one or more of the 24' 7" extension cables. Should it be necessary, add a similar gauge pair of wire (it can be purchased from an independent supplier) as an extension to the power wire.
2. Install the 7-pin connectors and cables on the trailer and tractor.
3. Connect the Display Cable to the tractor receptacle in the same manner as the one installed on the trailer. Be sure the two power wires (red & black) are connected to the back-up light power source on the trailer or tractor.
4. After the Display and power cable installation, add the coiled wire between tractor and trailer. The system will now function.
5. If the "beep" sound goes-off continuously, the connection may not be completed. Turn the power off, re-connect them completely and reset the power (reverse gear).
6. If any problems are encountered during the installation, please call customer service for technical support at (800)326-6949.

; please note: The back-up light power source from the tractor can be wired through the 7-pin connector to provide power to the system. [see Fig 3].



7-Pin Receptacle:	Display/Power Cable:
WHT	Black (Display&Power)
BLU	Blue
BRN	White
GRN	Green
RED	Red
YEL	Yellow
BLK	Red (Power)

Detector Installation

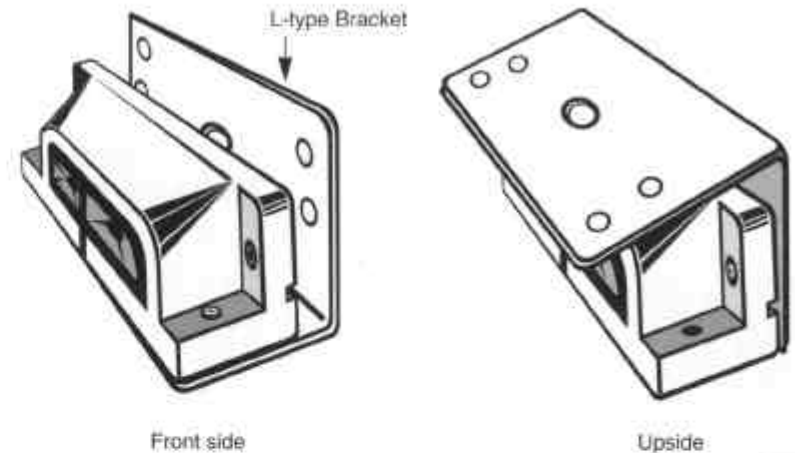


Fig. 4

Control Box Installation (Option)

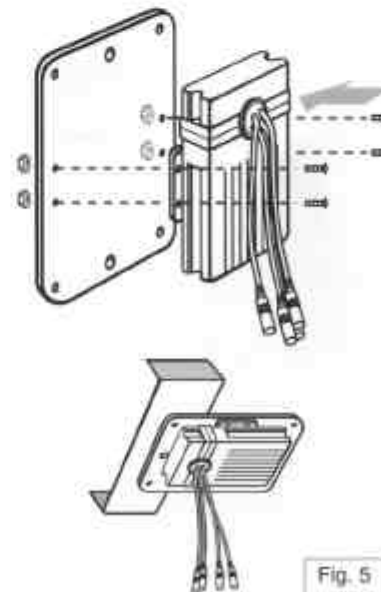


Fig. 5

Display Installation (Option)

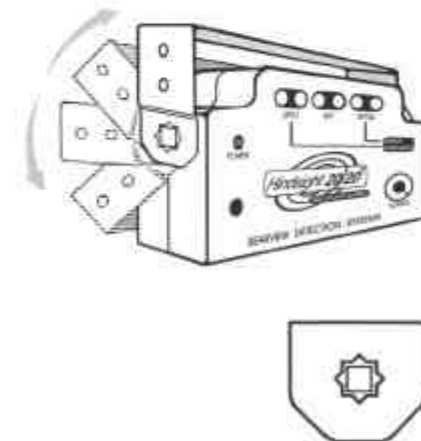
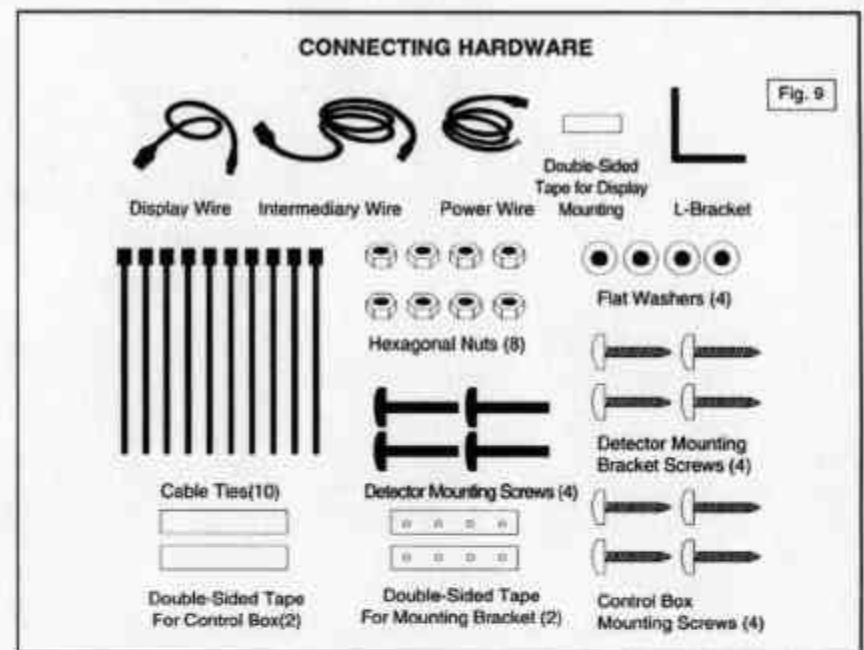
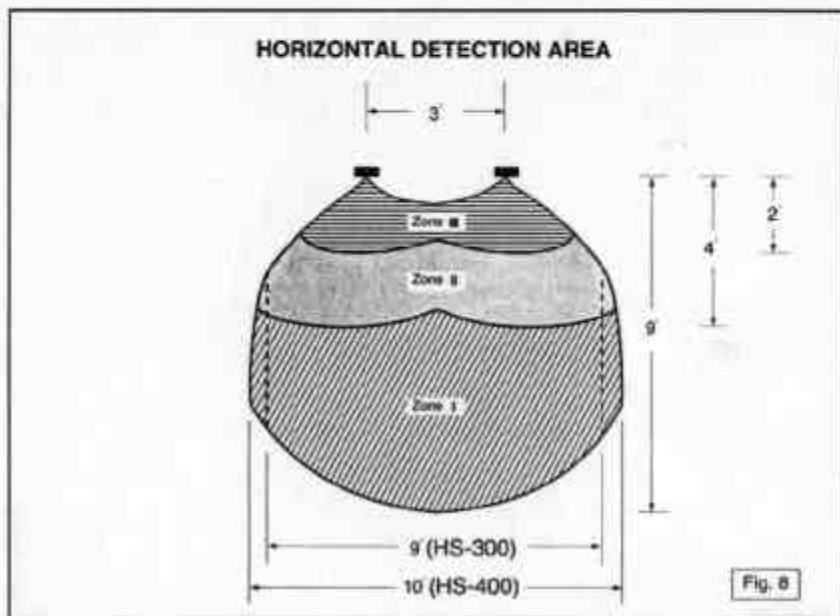
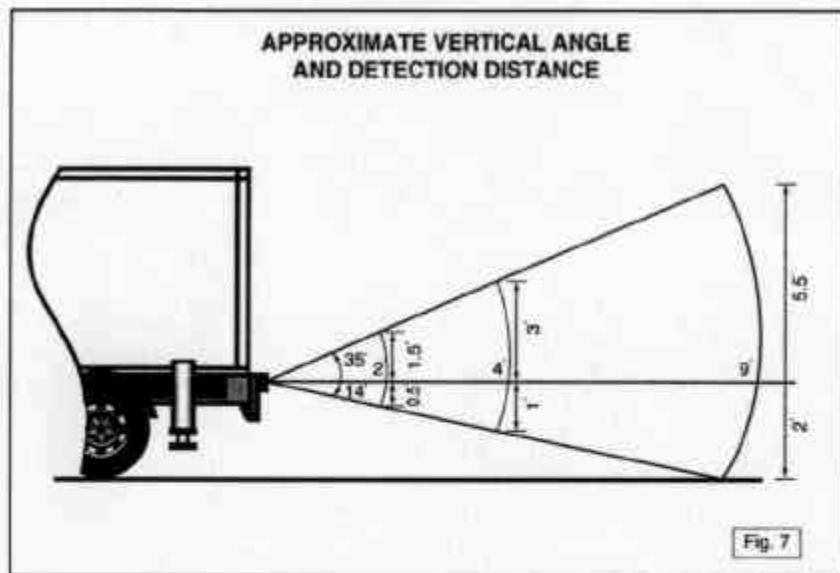


Fig. 6



Maintenance & Repairs

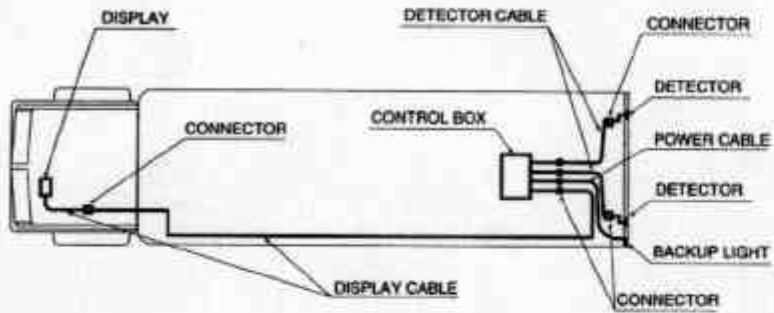
Maintenance

1. It is important to keep the sensor openings on the Detectors free of debris to get the most accurate response. Clearing during normal vehicle maintenance is usually sufficient to achieve this.
2. The Control Box should be kept in an area that is not subjected to road debris. The Control Box contains a small computer that can be damaged if severely jolted.

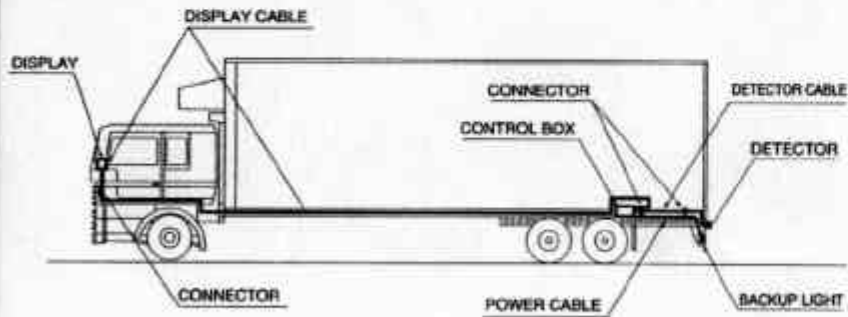
Repair

There are no user-serviceable parts inside of the components. Any malfunction within system should be examined and if component is determined to be malfunctioning, replace it. If there are further questions please refer to the warranty on Page 12 and contact **Sonar Safety Systems, Inc.** technical support department at (800)326-6949.

TYPICAL INSTALLATION (HS-300)



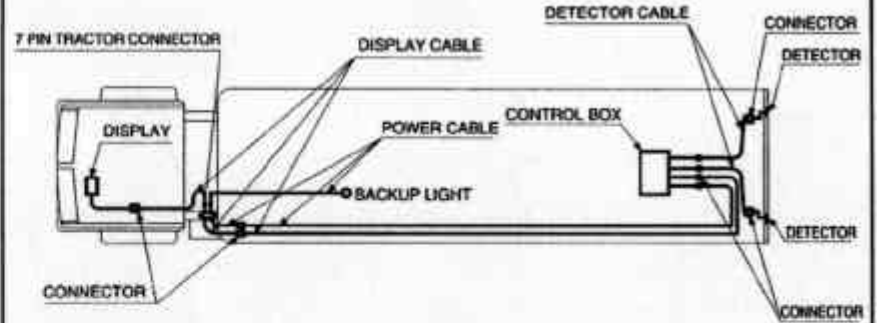
TOP VIEW



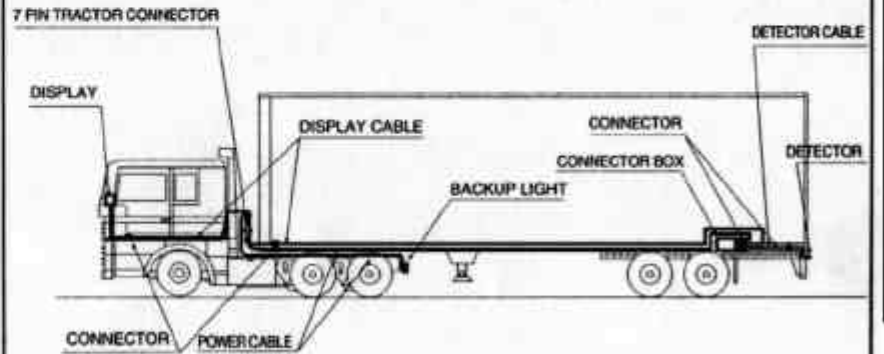
SIDE VIEW

Fig. 10

TYPICAL INSTALLATION (HS-400)



TOP VIEW



SIDE VIEW

Fig. 11